American innovation has long been the backbone of the United States economy. However, since 2013, the federal government’s contribution to basic science research funding has dropped below 50% of total R&D spending, resulting in an increasingly difficult environment to fund novel and innovative research. In the social sciences, The National Endowments for the Humanities and Arts has had funding increased below the rate of inflation. Graduate students, many of whom depend on federal funding for their research support, are particularly vulnerable to this decline in federal research funding. Congress must ensure that research conducted in all disciplines is properly funded to position the United States on the cutting edge of technological innovation and insights into societal advancements.

**Increase Funding for Basic Research in Science, Engineering, Humanities, and the Arts by 5%**

Projected inflation rates average 2.4% year-over-year from 2018 to 2020 and the Higher Education Price Index (HEPI) hit 2.8% for fiscal year 2018. Despite the 20% increase in the United States’ GDP between 2010-2015, there has only been a 2% increase in spending on research and development (Figure). R&D spending has a tremendous impact on local economies:

- The NIH reports that every $1 increase in the agency’s funding in 2018 generated $2.60 in economic output across the United States. This funding supports over 400,000 jobs in our country.
- The arts grew in economic output between 2012 and 2015 with an average growth rate of 2.6%. Between 2014 and 2015, the growth rate was 4.9% in inflation-adjusted dollars. This contributed $763.6 billion and 4.9 million workers to the U.S. economy in 2015, including an academic boot camp for vets entering or returning to college.
- Graduate students often research and organize public humanities programming which in 2016 attracted over 5.5 million people. In most cases, the federal government only funds ~15% of the cost of these programs, but the return on investment is tremendous to local and state economies.

**SAGE recommends:**

- Increase R&D funding at a minimum of 5% to account for inflation in the economy and through higher education by indexing R&D funding to HEPI + core inflation rates

**Maintain U.S. Technological Dominance Through A Talent Pipeline**

The U.S. must compete with key players, such as China, to be at the forefront of technological development. As jobs have been exported overseas, the U.S. is not only hemorrhaging opportunities for economic mobility but also expertise. We need to foster a talent pool of future industry innovators and leaders focused on the development of next generation technologies and manufacturing like 5G communication, artificial intelligence, renewable energy, and quantum computing. Government labs and public-private partnerships (PPP) funded by the NIH, NSF, NIST, and DoD already invest billions into local economies, and we need to continue to connect talent to opportunity.

**SAGE recommends:**

- Increase funding for fellowships, such as the NIH’s Training grants (T34 and T90) and the NSF National Science Foundation Research Traineeship (NRT) Program, for undergraduates to train in labs and for graduate students to engage in undergraduate mentorship
- Increase support for fellowship opportunities for graduate students to work in government labs and agencies
- Tax incentives and funding for PPPs, such as NIH’s SBIR and NSF’s Industry-university Cooperative research centers, and NIST’s “Manufacturing USA” program