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Planning for Research after COVID

*Merrill Series on
The Research Mission of Public Universities*

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Introduction

Mabel Rice

The Fred and Virginia Merrill Distinguished Professor of Advanced Studies and Director, Merrill Advanced Studies Center, University of Kansas

The following papers each address an aspect of the subject of the twenty-fourth annual research policy retreat hosted by the Merrill Center: Planning for Research after COVID. We are pleased to continue this program that brings together University administrators and researcher-scientists for informal discussions that lead to the identification of pressing issues, understanding of different perspectives, and the creation of plans of action to enhance research productivity within our institutions. The COVID pandemic led to the cancellation of the Merrill Research Retreat in 2020. In 2021 the focus was on the impact of the COVID pandemic on our universities, with a concentration on the challenges for research in the wake of the pervasive effects of the pandemic.

Our keynote speaker for the event was Dr. Joseph Steinmetz, former Chancellor of the University of Arkansas. In his presentation, he describes the state of higher education prior to the pandemic, the challenges universities faced over the last two years, and predictions of the post-pandemic environment.

Benefactors Virginia and Fred Merrill make possible this series of retreats: The Research Mission of Public Universities. On behalf of the many participants over two decades, I express deep gratitude to the Merrills for their enlightened support. On behalf of the Merrill Advanced Studies Center, I extend my appreciation for the contribution of effort and time of the participants and to the authors of this collection of papers who found time in their busy schedules for the preparation of the materials that follow.

Eighteen administrators, faculty, and students from six institutions in Kansas, Arkansas, Missouri, Iowa, and Nebraska attended in 2021, which marked our twenty-fourth retreat. Though not all discussants' remarks are individually documented, their participation was an essential ingredient in the general discussions that ensued and the preparation of the final papers. The list of

all conference attendees is at the end of the publication.

The inaugural event in this series of conferences, in 1997, focused on pressures that hinder the research mission of higher education. In 1998, we turned our attention to competing for new resources and to ways to enhance individual and collective productivity. In 1999, we examined in more depth cross-university alliances. The focus of the 2000 retreat was on making research a part of the public agenda and championing the cause of research as a valuable state resource. In 2001, the topic was evaluating research productivity, with a focus on the very important National Research Council (NRC) study from 1995.

In the wake of 9/11, the topic for 2002 was "Science at a Time of National Emergency"; participants discussed scientists coming to the aid of the country, such as in joint research on preventing and mitigating bioterrorism, while also recognizing the difficulties our universities face because of increased security measures. In 2003 we focused on graduate education and two keynote speakers addressed key issues about retention of students in the doctoral track, efficiency in time to degree, and making

the rules of the game transparent. In 2004 we looked at the leadership challenge of a comprehensive public university to accommodate the fluid nature of scientific initiatives to the world of long-term planning for the teaching and service missions of the universities. In 2005 we discussed the interface of science and public policy with an eye toward how to move forward in a way that honors both public trust and scientific integrity. Our retreat in 2006 considered the privatization of public universities and the corresponding shift in research funding and infrastructure. The 2007 retreat focused on the changing climate of research funding, the development of University research resources, and how to calibrate those resources with likely sources of funding, while the 2008 retreat dealt with the many benefits and specific issues of international research collaboration. The 2009 retreat highlighted regional research collaborations, with discussion of the many advantages and concerns associated with regional alliances.

The 2010 retreat focused on the challenges regional universities face in the effort to sustain and enhance their research missions, while the 2011 retreat outlined the role of Behavioral and Social Sciences in national research initiatives. Our 2012 retreat discussed the present and future information infrastructure required for research

success in universities, and the economic implications of that infrastructure, and the 2013 retreat discussed the increasing use of data analysis in university planning processes, and the impact it has on higher education and research. The 2014 retreat looked at the current funding environment and approaches which could be used to improve future funding prospects. The 2015 retreat addressed the opportunities and challenges inherent in innovation and translational initiatives in the time of economic uncertainty that have an impact on goals to enhance research productivity. The 2016 retreat focused on the building of infrastructure to meet the changing needs in research.

The 2017 retreat topic and discussions were on university research planning in the era of big data. The 2018 retreat topic and discussions were on big data and cross-disciplinary research. The 2019 retreat topic centered on challenges for implementation of cross-disciplinary research in the Big Data era. The 2020 retreat was cancelled in accordance with COVID pandemic public safety protocols.

Once again, the texts of this year's Merrill white paper reveal various perspectives on only one of the many complex issues faced by research administrators and scientists every day. It is with pleasure that I encourage you to read the papers from the 2021 Merrill policy retreat on Planning for Research after COVID.

Executive Summary

The Pandemic Appears to Be Waning: What's Next for Our Universities

Joseph E. Steinmetz, PhD

Executive Director, Psychological Clinical Science Accreditation System

Former Chancellor, University of Arkansas

- Spending an entire career in higher education has shown both good and bad. The resilience of universities is impressive, however, given how slow institutions can be in adapting to change. And universities continue to make significant contributions to society: research and discovery, teaching and learning, and outreach and engagement. Then came COVID-19. This paper describes the state of higher education prior to the pandemic, the challenges universities faced over the last year and a half, and predictions of the post-pandemic environment.
- The Great Recession (2007-2009) led to significant reductions in states' support of higher education and financial difficulties for many families. Yet most public universities adjusted and recovered relatively quickly. And while most would agree that research funding is inadequate, overall it has increased since the Great Recession. Generally, universities were in good shape prior to the pandemic but for four major concerns: 1. A financial model of state support and student tuition/fees that is not sustainable; 2. A change in student demographics from mainly white, middle and upper classes to poorer, more diverse populations; 3. The anti-immigration Trump administration affecting recruitment and status of international students, increasing racism and hate crimes, and stoking an "anti-intellectualism" and anti-science attitude; and 4. Equity issues in which higher education generally favors white students over disadvantaged students of color, as well as first-generation and poor students.
- From March 2020 to today, universities have taken financial hits; with revenue losses in fees, housing, dining, and athletics, there has also been expense increases for campus safety (Plexiglas barriers, masks, and vaccine-related costs). While faculty quickly shifted from face-to-face instruction to 100% remote, there were several struggles: some courses not suited for remote delivery, students prefer the classroom experience, and a differing opinion of quality and quantity of successful work-from-home arrangements. Other issues include the polarized political environment, state governance, deepening equity issues, and research grounding to a halt.
- After the pandemic has subsided, universities will need to address these conditions and make changes to build a strong future. Higher education institutions have always adjusted and met challenges; there is no reason to think universities will fail to meet the challenges exacerbated and created by the COVID-19 pandemic.

Post-Pandemic Research Innovations Contributing to Economic Development

Beth A. Montelone, PhD, Senior Associate Vice President for Research
Kansas State University

- At Kansas State University, nearly all research “hibernated” from March 2020 through June 2020. Work at the Biosecurity Research Institute (BRI) pivoted to new projects on SARS-CoV-2, once the viral sequence and samples were available. K-State then developed detailed plans for “reawakening” research with strict occupancy limitations and social distancing guidelines, which constrained activities in both laboratories and field settings. While the impacts of the hibernation have yet to be fully analyzed, there was speculation that researcher productivity would be negatively affected, particularly for parents, women, and underrepresented minority researchers.
- As the nation moves away from the pandemic, researchers and research administrators are looking to the future. K-State will continue building on its traditional strengths, fostering interdisciplinary work, and adhering to its land-grant mission to support communities and promote economic prosperity. To do so, K-State is aligned with the Kansas Board of Regents 2020 strategic plan and has chosen four focus areas: food and agriculture systems innovation, digital agriculture and advanced analytics, biosecurity and bio-defense, and K-State 105. These development activities were built upon the process followed during K-State’s successful pursuit of the Association of Public and Land-grant Universities *Innovation & Economic Prosperity* designation.
- This initiative will become part of K-State’s 2025 strategic plan, will be focused on issues of primary importance to state policymakers and citizens, and will connect university efforts directly to the national and international marketplace. As with any other advancement, K-State of the 21st century will evolve at much greater velocity.

Exploring Differences in Androgen Deprivation Therapy Use for Prostate Cancer Between Black Men and White Men

Sally L. Maliski, PhD, RN, FAAN, Dean and Endowed Professor

in Oncology Nursing

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Francis Yang, PhD

University of Kansas School of Nursing

- Androgen deprivation therapy (ADT) is the standard treatment for metastatic hormone responsive prostate cancer (CaP) and is increasingly recommended as an adjuvant treatment with radiation therapy due to its survival benefit. Yet, it has been demonstrated that Black men are less likely to receive ADT compared to their White counterparts; and when they did receive it, the treatment was delayed compared to other men. The purpose of this study is to explore provider and patient factors related to ADT receipt between Black and White men in a midwestern health system. Using the EPIC Clarity database, identifying provider characteristics and ADT utilization/recommendation patterns, and exploring perceptions of and experiences with ADT in interviews, an explanatory framework will be created and used in future testing and development of practice guidelines and policy recommendations.
- A convergent, mixed methods design will be used to determine receipt patterns and type of ADT used, patient sociodemographics, and patients' interactions with providers. Candidates for ADT who had a combination of treatments will be identified, as well as those who did not receive treatment. Authorizing providers and their demographics will be used to compare and contract treatment regimens. A Patient Advisory Board, consisting of community contacts and a prostate cancer support group, will assist in recruiting Black and White men eligible for inclusion in the interviews.
- The culmination of data collection and interview analyses will aim to produce a description of ADT utilization disparities and associated factors. The length of time from diagnosis to treatment will be compared, and provider characteristics will be identified through a latent class analysis. Data analysis and collection will run concurrently, then merged with the textual data from interviews to be examined and compared, evaluating if there is confirmation of or discordance between the men's perceptions and experiences with differences of ADT receipt patterns.

Lessons from the Department of Energy's Pandemic Response for Multidisciplinary Research

Julienne M. Krennrich, Director, Innovation Partnerships

James R. Morris, Ames Laboratory

- The hallmarks of science in the COVID-19 era include remarkable advances to address the pandemic, such as rapid genomic analyses and development and rollout of vaccines. Yet not all the challenges have been in the areas of biology and medicine. The U.S. Department of Energy (DOE) labs are driving multi-institutional and multidisciplinary research efforts, and their structure allows them to pivot and dedicate resources to accomplish significant results in a short timeframe. The Ames Laboratory (operated by the Iowa State University of Science and Technology) enables collaboration between ISU faculty and students and Ames scientists.
- A myriad of issues were raised when COVID-19 became a global pandemic in spring 2020, such as how to combine epidemiological modeling with human behaviors and economic modeling and how to provide the necessary medical equipment supplies where they were needed most. The CARES Act pushed research dollars to tackle these challenges. The DOE response was to create the National Virtual Biotechnology Laboratory (NVBL), which could be set up quickly due to the culture of multi-institutional collaboration between labs. The Ames Laboratory was able to tap into ISU's expertise to address the need for rapid on-site testing as part of the COVID-19 Testing R&D.
- The pandemic response demonstrated the DOE's ability to formulate "rapid response" groups of scientists that could devote significant resources and expertise to a mission-oriented (rather than academic-oriented) issue. National challenges are inherently multidisciplinary, and rapid change requires more than technical solutions. The key point is that the challenge drives the collaboration across fields. The DOE, and its National Laboratory system, seeks to nurture this culture, balancing mission-focused work with core expertise and capabilities.

Effects of the COVID-19 Pandemic and How We Adapted at the University of Missouri

Richard J. Barohn, MD, University of Missouri School of Medicine
Executive Vice Chancellor for Health Affairs,
Executive Director, NextGen Precision Health initiative

- The ALS Memantine Trial Study is a phase II study of the drug memantine (currently FDA approved for treatment of dementia) for patients with Lou Gehrig's disease to determine if the drug is safe in high doses, to explore the effect of the drug on blood biomarkers, and to detect if the drug could slow the progression of ALS. The COVID-19 pandemic had a significant impact on the approach and operation of the study. The protocol was adapted to enroll new patients and continue seeing enrolled patients remotely, using phone calls and video, as well as to maintain the collection of study data. Lessons learned under pressure of this pandemic will be useful in designing and conducting future clinical trials.
- By May 2020, the University of Missouri initiated a research restart plan and began reopening some laboratories and outpatient clinical research operations. MU investigators became involved with COVID-19-based research studies but encountered problems such as too few COVID-19 patients hospitalized at MU Health Care to recruit in each trial. That would change as the pandemic accelerated.
- Research expenditure growth and award dollars also were impacted due to the pandemic, and faculty began writing COVID-19 articles. One example, "Mandated Societal Lockdown and Road Traffic Accidents," determined if the stay-at-home policies led to a reduction in traffic accidents or fatalities.
- As the pandemic is still presenting challenges, more adjustments will be made. From a system level to an individual level, creative problem solving and meeting responsibilities for patient and community care have been hallmarks of the University of Missouri response.

From Office of Research to Office of COVID Response & Field Research in the Time of COVID

John P. Carroll, PhD, Director and Professor, School of Natural Resources

Bob Wilhelm, PhD, Vice Chancellor for Research and Economic Development
University of Nebraska-Lincoln

- Due to the COVID-19 pandemic, field research, an activity that must commonly plan for disruptions and unexpected events, had to be approached with even more creative and responsive efforts. As field research comprises a significant portion of the University of Nebraska-Lincoln's research portfolio, the university's response to the pandemic and continued field research are highly connected. A campus-wide task force was formed and coordinated specialized committees to address academics, research, facilities, etc. The leadership and staff of the Office of Research were also tasked with new operational duties.
- Strong restrictions were imposed in spring 2020, moving all academic programs to remote operations, curtailing all in-person events, and reducing research activities. The Forward-to-Fall committee was formed to plan for safe on-site activities for fall 2020. COVID-19 testing resources were organized, and a dashboard system was instituted. A majority of courses were offered with in-person options, and research continued with reduced density. The spring 2021 semester continued in the same manner.
- Field activities provide unique contrast to on-campus activities, and research outside of campus constraints is accompanied by elevated risk. Crop research, for example, faces broad weather vagaries, and researchers face uncertainties every year. It became clear field researchers and institutions were not as prepared to deal with a situation like COVID-19. Research location ownership resulted in a variety of rules and lockdowns, as well as guidelines on human and animal use and welfare considerations. Of particular concern were operational entities that require data harvesting from multiple sites, such as the groundwater well monitoring system for Nebraska.
- The most critical component of research enterprise is the workforce, and the most vulnerable identified as graduate and post-doctorate students. Communication was critical as these positions are time dependent and tied to contractual responsibilities. Despite the lack of planning for a pandemic of this magnitude, the strategies developed in the last 18 months minimized the impact on researchers while ensuring the safety of faculty, staff, and students.

Junior Faculty Research Career Development in the Era of COVID-19

Kimberly Kirkpatrick, University Distinguished Professor

Department of Psychological Science

Kansas State University

- The fundamental mission of the Centers of Biomedical Research Excellence (COBRE) grant that established the Cognitive and Neurobiological Approaches to Plasticity Center (CNAP) is to develop faculty research careers with an emphasis on securing R01-level extramural research funding. CNAP researchers study cognitive and neural plasticity in animal models and conduct basic and clinical research in humans. Faculty is supported by two funding mechanisms: research grant projects and pilot grants.
- CNAP faculty have access to outstanding core facilities and cutting-edge technologies and techniques. The faculty development model involves five pillars of success to support junior investigators: an active grant-seeking culture, outstanding mentoring program, grant writing program, advanced computational modeling, and modern neuroscience techniques.
- When COVID-19 unfolded, CNAP was entering the final quarter of Year 3: one investigator had graduated to R01 status, three had received extramural grants, and one had received an R21 competitive score. The program was on track to have COBRE grant renewed for the second phase. However, the effects of COVID-19 for CNAP-supported research were profound; human and animal research was strongly impacted, and laboratories were heavily affected. These adverse effects were not surprising because of the reliance on access to often vulnerable populations and specialized equipment in this discipline.
- CNAP began a COVID-mitigation strategy, first granting a no-cost extension for grants scheduled to end in May 2020, then using central funds to partly fund a technician's salary in a senior faculty's laboratory. The most extensive strategy was the months-long transition of human research to a remote testing format, which ultimately enabled researchers to work with vulnerable populations much more quickly.

Post-Pandemic Directions for Aging Care Research

Kristine Williams, E. Jean Hill Professor

University of Kansas School of Nursing

- The COVID-19 pandemic changed the world for everyone, but older adults were disproportionately affected. As the nation emerges from the pandemic, improving ongoing aging care must take precedence. Positive changes such as telehealth should be expanded, and measures to reduce infection and isolation identified and implemented. Nursing homes have been slow to adopt improvement initiatives that are critically needed. This paper pinpoints directions for research to leverage improvement in care for older adults in the post-pandemic world.
- Infection control, a priority for nursing home care during the pandemic, consisted of personal protection equipment and isolation precautions. While these protocols prevented more resident deaths, they also led to lack of socialization and increased residents' loneliness, depression, and anxiety. Research is necessary to explore opportunities for improving infection control, such as private resident rooms or pods, technology and telemedicine, and staff training.
- Rethinking nursing homes in favor of more community-based models has been suggested. However, policy and current reimbursement barriers must be overcome. An estimated one in five Americans provides care for adult family and friends at home. Research is critical on how to best support these families and must address other approaches to reduce reliance on nursing home care. The COVID-19 pandemic provides a wake-up call to overcome old challenges and develop new solutions in providing quality nursing home care.

What's Past Is Prologue: A Research Response to a Pandemic Tempest

Peter K. Dorhout, Vice President for Research

Iowa State University

- The Coalition for Epi Response, Engagement, and Science (CERES) mission is to protect and defend the agricultural industry against global threats, respond to and recover from outbreaks, and provide innovations for food security. In January 2020, CERES was planning its spring advocacy meeting, while attention was focused on an emerging zoonotic disease threat in Asia. By the February meeting, over 130 cases of COVID-19 had been confirmed in the U.S. Within three weeks of that meeting, cases had increased over 200 times, and universities were preparing to shut down all operations, including research. Evaluations were already taking place to understand the unique genetic composition, and a vaccine candidate entered Phase 1 clinical trials by mid-March 2020. In the history of our knowledge of viruses, there has never been such a rapid response to an infectious invader.
- Past experiences with global pandemics—1918 influenza, 1957 “Asian” flu, and 1983 AIDS—are a prologue of the next act in infectious diseases. In the late 19th century, average life expectancy in the U.S. was fewer than 40 years. Then Joseph Lister recognized the importance of sanitized hands and equipment in medical procedures. Robert Koch became the father of medical bacteriology and developed a potential treatment for tuberculosis.
- At the time of the 1918 influenza outbreak, a new generation of bacteriologists and virologists was emerging, such as Oswald Avery and later Gertrude Elion, who would discover new realms of science through their scientific choices. Their contributions represent examples of how research from the past serves as prologues to the present. Investments in fundamental science will continue to shine a light on the diversity of pathogens we may confront and how to do battle with them.
- There are challenges ahead for global research enterprise, namely funding, differences in access to treatments, and education. Higher education leadership must create environments of inclusion and equity. The future of invention and innovation must include diversity of thought. Different perspectives, views, and experiences must be part of our scientific lexicon.