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Proposal

Government Effectiveness Advanced Research (GEAR) Center

INTRODUCTION

NORC at the University of Chicago can't overstate how provocative we find the idea of the GEAR Center. One could argue that the GEAR Center's mission—using data to make government more responsive—has been part of NORC's mission since our founding. One of our very first projects was helping the government understand the civilian attitudes toward the possibility of the nation's entry into World War II. That segue from global depression into global war marked a unique moment in time when changes in politics, the economy, and technology caused corresponding changes in the needs of the American citizenry and the needs of the world. The government responded to those changing needs by creating new agencies, launching new programs, and taking on new responsibilities in the areas of education, healthcare, environmental protection, and global development. And NORC was an important and frequent partner in that endeavor—providing the data-driven insights that helped fuel a transformation in how the government nurtured and managed a growing and increasingly diverse economy and served a growing and increasingly diverse population.

The government now faces a similar transformational moment. Where 76 years ago, the government was realizing the enormity of its responsibilities, today it is realizing that it can no longer fulfill those responsibilities alone. It needs to rethink what it is and what it does, and it needs to partner with business, nonprofits, and other actors outside the government to meet the needs of a changing world. The constant in both moments is the need for data-driven insights to fuel the transformation, a transformation in which NORC is eager to participate.

NORC is known for delivering reliable data and rigorous analysis to guide critical programmatic, business, and policy decisions. Government, corporate, and nonprofit clients around the world partner with us to transform increasingly complex information into useful knowledge. NORC has partnered with state-level entities to help them develop and improve their All-Payer Claims databases with our Data Enclave—a tool that allows a closed community of researchers to share datasets that are too sensitive to share more broadly. A computing and analytics platform permits the general public to make queries online and download results and reports based on customizable parameters. Such user-centered services help improve healthcare affordability by allowing consumers to compare prices and quality for common elective services.

Our extensive work with the federal government includes gathering a variety of data related to education and employment outcomes. The Survey of Doctorate Recipients (SDR) provides demographic, education, and career history information for individuals who have received US doctoral degrees in the science, engineering, and health fields. The US is currently experiencing a STEM skills gap in some sectors. SDR data can help employers find ways to attract and retain high-skilled talent and enable policymakers to address bottlenecks in the supply of skilled STEM workers.

NORC is an independent affiliate of the University of Chicago, with whom we share a commitment to academic and scientific excellence. Central to NORC's relationship with the University is a close association with the Harris School of Public Policy, whose faculty members consulted on the development of this response. A number of Harris faculty members are NORC senior fellows or Trustees, and NORC staff members teach courses on analysis, geographic information systems, policy, and research methods at Harris. More than half of NORC's board is composed of University faculty and administration.

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I. INFORMING THE GEAR CENTER

1. Given the mission of the GEAR Center, what should be:

- Its strategic approach and operating objectives?
- Specific areas of innovation and practice to prioritize? For example, we anticipate an early focus on reskilling the Federal workforce and growing the economy through appropriate commercialization of Federal data.
- The process to identify and prioritize additional new areas on an ongoing basis?

LEVERAGING DATA TO MAKE GOVERNMENT MORE RESPONSIVE

The GEAR Center should seek to enhance government effectiveness by developing field-tested and scalable innovations in public administration and the delivery of services. In doing so, it should:

- Emphasize inter-disciplinary and cross-agency collaboration
- Prototype user-centered, practical, and actionable solutions that enhance government effectiveness
- Implement pilots and field-tests of prototypes that enable evidence-based impact evaluations
- Replicate successful innovations to ensure they work across different contexts
- Develop prototypes so that they are robust and scalable
- Facilitate public access to the Center's research to promote trust and transparency
- Train students at both undergraduate and graduate levels, as well as working professionals, to conduct evidence-based program evaluation and leverage data for the public good

We propose that the Center focus its work on developing and implementing actionable policy interventions with measurable outcomes. Rather than duplicating macro-level research on public administration currently being performed by existing think-tanks and policy research organizations, the Center should seek to fill the gap in user-centered, practice-oriented, empirical research in public service delivery and public sector innovation. The Center's work should be guided by evidence-based decision-making. Pilot tests should be evaluated on measurable outcomes, and successful pilots should be replicated across different contexts before they are rolled out broadly, to ensure that policy interventions are field-ready and scalable.

In partnership with government, industry, and its host academic institution, the Center would also develop a curriculum in public sector innovation for both matriculated students and working professionals. Through a combination of formal coursework, practicums, and work experience, the Center would expose students to public sector innovation and policymaking, and introduce a new generation of talent to possible careers in public service. The Center would also provide upskilling opportunities for working professionals, especially from the federal workforce.

EMBRACING TECHNOLOGY, CO-PRODUCING INNOVATION, AND DEVELOPING HUMAN CAPITAL

The President's Management Agenda identifies three key drivers of transformation: IT Modernization; Data, Accountability, and Transparency; and People – Workforce for the 21st Century. We propose that the Center's initial areas of innovation and practice track these three drivers. The Center should hence focus on the following practice areas:

- Digital government: Developing frameworks that help agencies bring services online and deliver mobile services, including making government statistical data more easily available to the public and leveraging open data to spur innovation, while promoting information security;
- Co-producing innovation: Tools and platforms that allow government and the public at large (industry, academia, citizens) to co-produce innovations that grow the economy and improve the well-being of citizens by leveraging data as a strategic asset;
- Human capital: Processes for hiring, developing, and retaining public administration professionals, particularly those with data science skills; and policies that promote data literacy among the federal workforce.

ESTABLISHING AND PRIORITIZING RESEARCH GOALS

We envision that one of the first responsibilities of the GEAR Center would be to identify and disseminate for comment a set of research priorities. The Center's Board of Trustees would be responsible for establishing the priorities. To identify these priorities, the Center would draw from recommendations articulated in the EOP's *Delivering Government Solutions in the 21st Century* document, as well as convene stakeholders to solicit their inputs. Federal agencies' GPRA reports outlining their performance goals could be a starting point for identifying priority areas for research that would facilitate achieving their performance goals. Identifying and prioritizing new practice areas would be an ongoing process. The Board of Trustees might review and determine strategic innovation and practice priorities every five years. On an annual basis, it would assess progress and outcomes of existing priorities, to refine priorities for the remainder of the strategic review period.

2. How should a GEAR Center be operationalized, including its structure, such as a physical center, a network, a consortium of institutions, or other approaches?

A number of operational models would be suitable for the GEAR Center. The feature that best distinguishes these models is the degree to which the Center's research and development work is done in-house. Having internal R&D capabilities would allow the Center to be deeply integrated with government agencies, and facilitate the Center's access to proprietary government data and resources. Alternatively, the Center might be operationalized in a way that best encourages and catalyzes private sector innovation. The Center should ideally be able to tap the best ideas from across industrial, academic, and non-profit sectors, and to help grow and scale the most promising innovations. We present these models in more detail below.

Full-service model. The GEAR Center could be a physical center with a full complement of scientific, technical, and support staff, as well as its own platform and infrastructure for prototyping and delivering innovations. Under this setup, Center staff would be responsible for projects across their entire life cycles. There are several advantages to this structure: It would allow federal clients to interface directly with experts across all practice areas in the Center, with minimal friction and latency. It would also allow the

Center to dynamically allocate staff across projects and practice areas in anticipation of shifts in clients' needs. Federal agencies would be able to detail staff to the GEAR Center to induce cross-agency collaboration and deepen collaborative relationships between federal agencies and Center staff. The Center would also be able to serve as an institutional home for senior agency staff on detail or sabbatical from their agencies, as well as visiting academic researchers, through a residential and non-residential fellowship program. A full-service GEAR Center would be the most resource intensive, would require significant upfront investment, and would benefit from a long-term commitment from the federal government, in the spirit of the Federally Funded Research and Development Centers (FFRDCs) and National Laboratories.

Network model. Rather than doing all R&D in-house, the GEAR Center could co-produce innovations with partners in the industrial, academic, and non-profit sectors. In this model, the GEAR Center would focus on coordinating and servicing a network of Center affiliates. The Center would invite researchers and practitioners with expertise in its areas of innovation and practice to become Center affiliates for a fixed term. The bulk of the Center's scientific work would be performed by Center affiliates, who would continue to hold full-time appointments at their home organizations. Full-time GEAR Center program staff would be selected for their deep familiarity of federal agency operations, organization, and personnel, as well as their state-of-the-art knowledge of relevant academic disciplines. GEAR Center professionals would facilitate collaborations between Center affiliates and federal agencies, and would be responsible for day-to-day project management. They would add value by ensuring that research conducted by Center affiliates is tailored to the context of federal agency partners, and their deep relationships with agency principals would help to inform policymaking on the basis of the Center's research. This structure would allow the Center to tap into the widest possible pool of scientific expertise with lower startup costs compared to a full-service Center. A network structure has been successfully implemented in the public policymaking domain by organizations such as the Rhode Island Innovative Policy Lab (RIIPL), and in the international development context by organizations such as Innovation for Poverty Action (IPA) and the Abdul Latif Jameel Poverty Action Lab (J-PAL).

Federally chartered research organization. This is the organizational form of the National Academies of Science, Engineering, and Medicine that was chartered in 1863 to give science advice to the federal government. An important component of this model is the ability to take sole-source government contracts as well as private funds. This form of organization could operate either as a full-service research organization or as the coordinator of a network of researchers.

Hub model. The GEAR Center could serve as a hub or clearinghouse between federal agencies and contractors. On the demand-side, Center staff would assist federal agencies in conceptualizing and articulating projects aimed at enhancing government performance, based on a design thinking methodology and an evidence-based policymaking framework. The Center would serve as a platform for facilitating projects in the domain of government performance research projects, and as a repository of cross-agency institutional knowledge. On the supply-side, the Center would best source ideas generated by firms and researchers across industrial, academic, and non-profit sectors. It could also provide capital to promising, early-stage public sector firms to help them deliver their innovations at scale. As an information clearinghouse, the Center would be able to identify scalable innovations that are applicable across agency contexts, replicate successful innovations, and reduce duplicate efforts. Although this structure would have the fewest internal capabilities compared to the other configurations, it has the advantage of being nimble, and would have potentially the highest return on investment.

II. ESTABLISHING THE GEAR CENTER

3. What models of public-private partnership should inform the GEAR Center:

- What sectors, stakeholders, types of expertise, and networks or programs should be involved?
- What should a governance structure look like or include?
- How should the GEAR Center maintain mission focus without the Federal Government being responsible for ongoing administration, staffing, and operational management?

In today's economy, it is difficult to find a commercial or non-commercial activity that does not include some participation from the public sector; nearly all professional activity in the U.S. involves some element of public-private participation. The federal government has long benefited from the ability to draw on the capacities of the private sector for research and operational support. The configuration of relationships, or partnerships, between the public and private spheres depends on the priorities of the government and the extent to which the private partner has the capacity and desire to be guided by those priorities. The envisioned GEAR Center would fit into the continuum of public-private cooperation that ranges from the government as sponsor and funder of privately run research efforts, to an investor in research, to a convener, and to a consumer of innovative services and products.

In the case of the GEAR Center, the federal government would act not only as the principal consumer of Center services and products, and an investor in innovation, but also as a leading director in the Center's governance. As primary client and primary director of GEAR, the government has several goals that are at least somewhat in tension. It wants to get the widest variety of quality ideas and so needs to cast a wide participatory net. Yet, it also needs GEAR to be run in an efficient and organized manner.

In our view, the best way to balance inclusion and coordination would be through deeply rooted collaboration between governments at the federal, state, and local levels; academia; industry; and the civic sector. States and cities are testbeds of policy innovation through public-private partnerships, from using consumer reviews on social media websites to target restaurant inspections, to sharing data with ride-sharing and mapping companies to improve urban transportation. Academia is a key actor because the theoretical and experimental work done in universities provide the basis for actionable interventions, and because of the pedagogical pillar of the Center. The industrial and civic sectors play multiple roles—technology providers, data end-users, and the conduits that connect the government to citizens—and must be involved in the GEAR Center's work.

As such, the main governing body for the GEAR Center—such as a Board of Trustees—should draw its members from federal, state, and local governments, as well as the academic, industrial, and civic sectors. A substantial number of its members should be drawn from the academic research community, and in particular from the Center's host institution. The federal government would be represented by the OMB and GSA. Representatives of state and local governments that have been especially active in public policy innovation should be invited to join the Board. Board members should have a wide range of expertise in data science, management of innovation, and skill retraining.

A Board that comprises a wide skill set, recognizes the Center's public mission, and also acknowledges the Center's goal of long-term financial sustainability, can ensure that the Center maintains its mission as well as financial stability.

4. What examples already exist that serve a purpose similar to the GEAR Center, whether for governments or other institutions:

- How might such examples be replicated, scaled, connected, or more systematically leveraged?
- Opportunities for the Government to learn more about these examples, such as through a demonstration, virtual interaction, or other method?

We highlight two examples that we believe are particularly germane to the GEAR Center. The first example, the Behavioural Insights Team in the U.K., describes key factors driving the success of a government-linked public sector innovation unit. It also demonstrates how an organization originated from the government can subsequently thrive as a for-profit company that counts as clients commercial companies, non-profits, and governments from around the world. The second example, Sidewalk Labs, showcases how a privately funded company can work with governments at the local, province, and federal level to revitalize urban areas. It also suggests a revenue model in which innovations developed in the course of its main business can be adapted and commercialized as standalone products.

BEHAVIOURAL INSIGHTS TEAM

In the U.K., the Behavioural Insights Team (BIT) is a "social purpose" company that is jointly owned by the U.K. government, Nesta (an innovation foundation), and the company's employees. Its mission, at inception, was to improve public services by making them more effective and easier to use. BIT achieves this goal by first studying the system in question to identify outcomes of interest, and then examining how individuals interact with the system. The hallmark of BIT is designing low- or no-cost interventions to improve identified outcomes by exploiting known behavioral tendencies among individuals. It assesses and iterates on these interventions using randomized controlled trials and quasi-experimental methods, in order to build up a body of evidence in favor of or against such interventions.

BIT is widely considered to be a success story. Having started out as part of the Cabinet Office in the U.K. government, BIT was subsequently spun off as a public-private cooperative. In addition to working with the U.K. government, BIT has expanded its portfolio to work with non-profits and international partners. The Centre for Public Impact attributes BIT's success to three factors.[1] First, there was a strong political commitment to BIT, and the project had buy-in from civil service stakeholders who saw the value of evidence-based policymaking driven by behavioral insights. Second, BIT at its inception had clearly defined goals to achieve within a given time frame. The sunset clause put pressure on BIT to identify and deliver on big wins early on, in order to establish its credibility.[2] Third, BIT put together a team that combined deep policymaking knowledge with training in economics, psychology, and program evaluation. It also had quantifiable deliverables, such as achieving a certain amount of savings for the government. BIT's team thus had the capacity to transform ideas into measurable impact. Notwithstanding differences in the structure of government between the U.K. and the U.S.—for instance, government is more centralized in the U.K. compared to the U.S.—focusing on the success factors behind BIT can help the GEAR Center set itself up for success.

[1] Centre for Public Impact, "The Behavioural Insights Team in the UK," *Centre for Public Impact (CPI)* (blog), accessed August 30, 2018, https://www.centreforpublicimpact.org/case-study/behavioural-insights-team-in-the-uk/.

[2] "Chuck That CV: Using Behavioral Science to Recruit the Best Hires," *Knowledge@Wharton*, May 19, 2016, http://knowledge.wharton.upenn.edu/article/chuck-cv-using-behavioral-science-recruit-best-hires/.

SIDEWALK LABS

Sidewalk Labs offers another example in a different context. The company is funded by Alphabet, the parent company of Google. While Sidewalk Labs has been described as an urban innovation company, it can be usefully thought of as a venture capital firm with interests in real estate development, managed services, and urban technology. Currently, its main focus is an urban redevelopment project undertaken in partnership with Waterfront Toronto, a development agency jointly founded by the governments of Canada, the province of Ontario, and the city of Toronto. Although the challenges that Sidewalk Labs aims to solve differ from the public administration focus of the GEAR Center, they share similar methods: user-centered problem solving, pilot-testing, and data-driven decision making. More interesting is how Sidewalk Labs plans to monetize its investment in its Toronto project. Despite concerns that the company might generate revenue from selling data collected from residents, Sidewalk Labs has said that it aims to license the technology it produces for this project and sell it to other cities.[3] If the GEAR Center decides to draw on this business model, it might consider a revenue model based not only on project-based consulting services, but also on product development through commercializing the technology that it produces in the course of its consulting projects. In addition, the GEAR Center might explore a role as an investor in early-stage, innovative public sector companies that are seeking capital to scale up their operations.

5. What model should be used to establish a GEAR Center, including:

- The most effective and low-burden mechanism to establish a GEAR Center, such as the Government issuing a challenge, pursuing a traditional procurement, or an alternate approach?
- If the Government were to pursue a challenge or other open competition, the key considerations in establishing a panel of judges?

A PHASED APPROACH TO ESTABLISHING THE CENTER

The Center has an ambitious mission to serve the federal government. It is appropriate that the government control its formation. At the same time, we agree with the RFI that the Center should be self-sustaining over the long term, with a diversified revenue model and portfolio of clients. As such, we recommend the following phased process to establish the GEAR Center. In its initial establishment, the Center should be organized as a federal contract made to a single host entity, almost certainly one with a broad array of subcontractors to encompass needed capacities. The National Science Foundation (NSF) is a federal agency that offers the depth of experience needed to oversee the GEAR Center during this contracted period. As a contracted program, the Center would operate under the Federal Acquisition Regulations (FAR), which provide important protections to both government and contractor, and may be especially important in the creation of this new enterprise.

During the contract period in which the Center is engaged in its principal work of enhancing government effectiveness, plans could be developed to transfer the Center's assets and activities to a newly created non-profit organization. The preparation for that transfer would be guided by explicit provisions of the contract. One requirement to create the foundation for the transition of the Center from a contracted program to a fully functioning non-profit enterprise would be the establishment of a board of advisors drawn from the federal and other governments, academia, the private sector, and the host institution. That

[3] Elizabeth Woyke, "A Smarter Smart City," *MIT Technology Review*, February 21, 2018, https://www.technologyreview.com/s/610249/a-smarter-smart-city/.

board could assume the responsibilities of a Board of Trustees when the independent enterprise is established. As advisors during the federal contract period and later as trustees of an independent enterprise, that board would guard the organization's focus, allowing it to pursue its mission.

While the Center is operating as a contracted program, activities such as training and products (e.g., custom analysis) would be defined to help support the independent Center. This period could also see the establishment of a residual contract with the federal government that would allow the government to contract with the Center on a sole source basis as would be beneficial. Because the Center is to be organized to provide services not currently available to the government in other forms, such an arrangement would not constitute an unfair trade practice.

The competition might be run by an organization such as NSF or DARPA, which has experience running multi-disciplinary complex organizational competitions. OMB might also run the competition, given its prior experience in organizing prize competitions.[4] The review panel could be recruited with the advice of National Academies (e.g., the National Academy of Sciences, the National Academy of Public Administration, and the National Academy of Education) to ensure the necessary expertise.

In our view, the panel of judges should mirror the composition of the Center's governing body (see Question 3). In particular, a substantial number of panel members should be drawn from academia to align the panel with the research and pedagogical missions of the Center. The panel should also include experienced public servants and public administration practitioners, representatives of state and local governments at the leading edge of public sector innovation, and representatives from private and non-profit sector organizations that have been involved in connecting government data and services to citizens.

If the proposal reviewers are to include current or former elected officials, then an explicit partisan balance should be maintained in order to avoid creating a perception that the Center is intended to represent a particular political position. However, the administration of government, which is the focus of the Center, is an inherently non-partisan enterprise. There is neither a liberal nor conservative way to be rigorous, scrupulous, or efficient. So it is not clear that current or former elected representatives need to be represented among competition judges or proposal reviewers.

DRAWING ON EXISTING CENTERS OF INNOVATION

The government might consider a radically different approach that begins by drawing on existing centers of innovation within the federal government. For example, 18F has been working on IT modernization and digital product development within the federal government, and OPM's Innovation Lab partners with departments and agencies to deliver training in human-centered design. Such centers of innovation could be consolidated and corporatized, and subsequently seed the GEAR Center, in partnership with external organizations. Such an approach was adopted in the privatization of the U.K.'s Behavioural Insights Team (see Question 4), which started out as an element of the U.K. government's Cabinet Office.

THE ADVANTAGES AND LIMITATIONS OF A CHALLENGE

Finally, we note that a challenge issued by the government works best when the winning criteria are clear, the pool of potential competitors is broad and deep, and competitors are willing and able to bear some of

[4] In 2015, OMB organized the Digital Service Contracting Professional Training and Development Program Challenge.

the costs of developing a solution to the challenge.[5] An advantage of issuing a challenge to establish the GEAR Center is that it selects for institutions that have already demonstrated the capacity to execute complex organizational challenges, as well as an ability to identify funding for the Center. At the same time, a challenge would exclude otherwise qualified institutions that require a commitment from the government before they are able to invest significant resources in the project. It is also worth considering whether a high-profile, highly public challenge would favor style over substance, and whether it is superior to the acquisition processes—such as the Request for Proposal model—that have worked so successfully to provide the federal government with much needed research and support services. The government should weigh these considerations in determining the mechanism through which it would establish the GEAR Center.

6. **How should a GEAR Center be funded? The Federal Government expects to provide seed funding to support near-term establishment of the GEAR Center agenda, but a market-driven model will be needed to sustain the Center facilities, operations, and agenda over the long term.**
    - What could be sustainable funding approaches, including sources of funding?
    - What market incentives are necessary to make the Center sustainable?

The Center should be an independent 501(c)(3) legal entity, affiliated with a university or non-profit research institute. Its non-profit status would underline the Center's mission to improve public well-being through enhancing government effectiveness. However, the Center's non-profit status should not preclude it from creating for-profit subsidiaries to undertake commercial activities that support the Center's long-term sustainability. In fact, its non-profit status would diversify and likely guarantee the Center's funding streams to ensure long-term sustainability. The Center should have an endowment and some ongoing governmental support sufficient to fund the organizational core, but its revenue model should primarily comprise research grants and contracts from governmental and private sector sources. We envision four pillars in the Center's revenue model:

- Services. The Center would provide consulting; program design, implementation, and evaluation; and other business process reengineering services to federal agencies on a contract basis.
- Education. The Center would provide training in statistical and data science skills, in partnership with its host university, for both full-time students and working professionals, with an emphasis on skills relevant for the federal workforce.
- Products. The Center would commercialize products developed during the course of its collaborations with federal agencies. Such products might include platforms for training delivery and evaluation, open data apps, and platforms for sharing sensitive data.

Endowment. Finally, the Center should have some continuing government support and raise an endowment that can provide a regular stream of income to supplement revenue from the other three pillars, so as to maintain continuity of staff and innovation investment funds.

[5] Jonathan Bays, Tony Goland, and Joe Newsum, "Using Prizes to Spur Innovation" (McKinsey & Company, July 2009), https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/using-prizes-to-spur-innovation.

III. ANTICIPATED EARLY FOCUS AREAS

7. **What models, approaches, and opportunities should inform an anticipated early focus on reskilling and upskilling Federal employees? For each questions, please cite any available data or research to support your answer.**

   - What are leading practices for effective reskilling, upskilling, and training adult workers, including opportunities for new applications of existing models?
   - What approaches could be piloted for possible application and scalability across the Federal sector in various learning domains (e.g., cognitive, affective, behavioral) – such as gamification, use of massively open on-line courses (MOOCs), apprenticeship models, and other new approaches?
   - What are examples of metrics currently used to assess the effectiveness of reskilling and upskilling efforts?
   - Do any of the suggested approaches have a particular nexus to the Federal workforce and/or to the automation of existing workflows, and transformation of existing skills to in-demand skills expected to comprise the "future of work"? If there are occupations or skill sets that would provide an opportunity-rich environment, please include specifics.

In recent years, workforce reskilling has been a key focus of both government and corporate leaders.[6] Workforce reskilling has also been the focus of much innovation. However, we still lack validation, a precise understanding of which innovations work, and the conditions under which they are most effective.

For example, while innovations like MOOCs and gamification offer the promise of delivering reskilling and upskilling opportunities to learners at scale, we know relatively little about the effectiveness of such innovations. Pilots of online courses have sometimes shown worse outcomes compared to traditional face-to-face courses.[7] In a pilot conducted by San Jose State University (SJSU) in partnership with Udacity, a MOOC provider, an online version of an introductory statistics course achieved a pass rate of 50.5%, compared to a pass rate of 76% in a typical face-to-face version of the same course. However, a second iteration of the online course achieved a pass rate that was comparable to the face-to-face version.[8] Studies of pedagogical innovations are often limited in the conclusions they can draw, for several reasons. In the absence of random assignment, study participants in different treatment groups may differ in characteristics that affect learning outcomes. Researchers in the SJSU study note, for example, that participants in the second iteration of the course were older, had more work experience, and already had a college or advanced degree. Sample sizes in pilot studies may be too small for precise inferences. And the effectiveness of different approaches to deliver training may depend jointly on the content of the course, its design, and learners' characteristics (such as prior preparation).

[6] See, e.g., The Council of Economic Advisers, "Addressing America's Reskilling Challenge," July 2018, https://www.whitehouse.gov/wp-content/uploads/2018/07/Addressing-Americas-Reskilling-Challenge.pdf.

[7] Eric Westervelt, "The Online Education Revolution Drifts Off Course," *All Things Considered*, December 31, 2013, https://www.npr.org/2013/12/31/258420151/the-online-education-revolution-drifts-off-course.

[8] Erin L. Woodhead et al., "An Examination of the Outcomes of a Brief and Innovative Partnership: SJSU and Udacity," *Innovative Higher Education* 42, no. 5 (December 1, 2017): 463–76, https://doi.org/10.1007/s10755-017-9400-4.

We believe that reskilling efforts are most effective when training and job requirements are closely aligned, and when training provides a clear pathway to new or more enriching work. In addition to aligning human resource processes with reskilling initiatives (e.g., by building learning into work performance assessments), internal technological platforms may also need to be updated. Learners who have had positive experiences with upskilling programs sometimes return to their workplace to find that they cannot apply their skills because (for example) the open source software they learned or the cloud computing resources they used were either unavailable or incompatible with existing business processes.

We recognize that a tradeoff exists between having granular job-to-training matches and delivering training at scale. And elevating the overall level of data literacy within the federal workforce will help to support the government's IT efforts, even if training is not tied to specific work responsibilities. That said, we believe that rather than trying to find optimal modalities for delivering reskilling opportunities, the GEAR Center can best contribute to federal workforce skilling efforts by developing and refining scalable processes and platforms for identifying optimal employee-job-training matches. For example, Bob Emploi, a Google-funded startup, is partnering with the French government to develop algorithms that generate job and skill recommendations for jobseekers. A similar platform can help to identify personalized reskilling opportunities for employees in a large and diverse federal workforce.

8. For an anticipated early focus on how Federally owned data could help transform society and grow the economy:

- Are there opportunities for the Federal government to partner with the private sector to improve data architecture/taxonomy, and data quality/hygiene?
- Are there innovative economic models that highlight the value of the data, and would encourage private investment to capture that value both within the Government and across the broader economy? What are the barriers to implementing these models?
- Are there specific data sets that could be further leveraged by the Federal government, start-ups, and the public – that, once scaled, have a significant potential to contribute to the greater good (bolster the economy, improve population health, provide services to the general public, etc.)?

Different challenges and opportunities arise across different categories of federally owned data. We first consider sensitive microdata. We echo the recommendation of the Commission on Evidence-Based Policymaking that the federal government be empowered to develop the technological capacity and the processes to securely combine and provide access to existing data for statistical purposes.[9] The Commission recommends the creation of a National Secure Data Service (NSDS) that would have the authority to fund and induce research and development efforts in privacy-enhancing technologies and secure data access. These efforts would build on existing research initiatives in areas such as differential privacy, both within the government (e.g., the Census Bureau) and in the private sector (e.g., Apple, Google, and Uber). By pushing out the Privacy/Data Use frontier, efforts to securely combine and deliver confidential data can facilitate public access to microdata for commercial, academic, and public sector innovations.

[9] Commission on Evidence-Based Policymaking, "The Promise of Evidence-Based Policymaking: Report of the Commission on Evidence-Based Policymaking," September 2017, https://www.cep.gov/content/dam/cep/report/cep-final-report.pdf.

Turning to open data, we see opportunities to scale up existing models. For example, the NOAA Big Data Project partners with IaaS providers to disseminate NOAA data at scale and at cost-efficient price points. State and local governments have been using lidar data—some collected by federal agencies—to track illegal tree removals, manage storm water, and assess road conditions; lidar data collected by NOAA and the U.S. Geological Survey can help to spur innovation in both public and private sectors.[10] Google has also made a number of large public datasets available on its BigQuery platform. We believe there are similar opportunities for data dissemination in the fields of transport (e.g., freight data); trade (e.g., customs import records); and natural resources (e.g., remote sensing data). The Opportunity Project offers another model in which government, communities, and the technology industry can be brought together to address public policy challenges by leveraging open data. The main challenges here are the lack of knowledge among potential data users of the nature and structure of available open data, and the considerable efforts that are sometimes needed to link records across different datasets. Development and dissemination of metadata can help to overcome the first challenge.[11] Data users can also collaborate with government data providers to standardize record identifiers across domains to facilitate record linkages.

Finally, we offer two examples of datasets that have been or could be leveraged to serve the public good. First, in partnership with state-level entities, the NORC Data Enclave has helped states to develop or improve their All-Payer Claims databases, which are large-scale databases that systematically collect medical claims, eligibility, and provider files. A computing and analytics platform enables the general public to make queries online and download results and reports based on customizable parameters. Such user-centered services help to improve healthcare affordability by allowing consumers to compare prices and quality for common elective services.[12] Second, the federal government collects a variety of data related to education and employment outcomes that can be further leveraged. For example, the Survey of Doctorate Recipients (SDR) provides demographics, education, and career history information for a large sample of individuals who received a U.S. doctoral degree in a science, engineering, or health field. The U.S. is currently experiencing a STEM skills gap in some sectors.[13] SDR data can help employers to determine ways to attract and retain high-skilled talent, as well as enable policymakers to explore potential bottlenecks in the high-skilled STEM workforce supply.

[10] Daniel Fisher, "Lidar: A Data Resource Worth Sharing," Data-Smart City Solutions, August 23, 2018, https://datasmart.ash.harvard.edu/news/article/lidar-data-resource-worth-sharing.

[11] Commission on Evidence-Based Policymaking, *op. cit.*, page 86.

[12] See, for example, the application developed by Colorado's Center for Improving Value in Health Care, available at https://www.civhc.org/shop-for-care/.

[13] Yi Xue and Richard C. Larson, "STEM Crisis or STEM Surplus? Yes and Yes," Monthly Labor Review (U.S. Bureau of Labor Statistics, May 2015), https://www.bls.gov/opub/mlr/2015/article/stem-crisis-or-stem-surplus-yes-and-yes.htm.

IV. LOOKING AHEAD

NORC began as a partner to federal agencies trying to understand the best way to serve their constituents, and that partnership has been the foundation of our work for more than 75 years. Today, NORC collaborates with academic institutions, foundations, businesses, and government agencies at the federal, state, and local levels to inform strategic decision making and design, and validate programs and organizational performance improvements. As such, the mission of the GEAR Center to find innovative ways to make government more responsive and accountable in a rapidly changing world has been NORC's mission, a mission we embrace as both our legacy and our future. As an organization that firmly believes in the power of rigorous data collection and analysis to improve public governance and social well-being, and as citizens with a personal stake in how well government functions, we are both fascinated by and profoundly enthusiastic about the idea and potential of the GEAR Center. We hope the ideas we've presented in our response to the government's RFI help refine your thinking about the GEAR Center, and we would gladly welcome further conversation to help move the initiative forward.