Research statement: Arman Rezaee

Introduction: Information is a critical input to economic decision-making, guiding how both governments and individuals allocate resources and respond to their environments. In developing countries, where information has been historically scarce, the rapid expansion of cellular networks over the past two decades has dramatically increased access to timely, actionable data. My research is motivated by the idea that this sudden shift toward an information-rich environment is fundamentally altering economic and political behavior. Two strands of my research focus on cellular technology-enabled information provision, the first on information on public service delivery, and the second on information in private markets. A final strand leverages technology-enabled information for retrospective research on the historical and political drivers of public service delivery.

Information on public service delivery: The first strand of my research demonstrates that while technology-enabled information flows can enhance bureaucratic capacity, their effectiveness depends on underlying political and personnel constraints. Three papers, based on a health e-monitoring system my co-authors and I designed, implemented, and experimentally evaluated in Punjab, Pakistan, headline this set. A fourth paper leverages an election fraud-reducing technology intervention in Afghanistan in 2010.

Data and Policy Decisions (JDE, 2020) shows that digitizing inspections of rural health clinics increased monitoring activity but did not, on average, reduce absenteeism among government doctors. This paper contributes to the growing literature on the personnel economics of the state, which shifts focus from institutions to the politicians and bureaucrats operating within them. A key contribution of the paper is its examination of how incentives shape behavior across three layers of Pakistan's health bureaucracy. It shows not only how a policy targeting health inspectors influenced their own performance, but also how it affected the doctors whose rural health clinics became more likely to be inspected, and the senior health officials who gained access to newly-digitized data to help manage their districts. Another key contribution of the paper relates to this latter group of high-level bureaucrats. We find that providing senior health officials with information on low staff attendance causes them to take corrective action, indicating that data can change how policy makers behave, even in settings with weak institutions.

The Political Economy of Public Sector Absence (*JPubEc*, 2023) explains the lack of improved doctor absenteeism from our e-monitoring platform by documenting how political interference shields connected doctors from accountability. This paper bridges the aforementioned personnel economics of the state literature with a long-running

political economy literature arguing that patronage jobs interfere with service delivery. We add to this by drawing a link between local politics, absenteeism per se, and the potential for reforms to fix the problem. Our central contribution is to provide a set of results linking patronage jobs to the persistence of absenteeism.

Personalities and Public Sector Performance (*EDCC*, 2025) complements these other two papers by showing that non-cognitive traits like conscientiousness predict performance of public servants across several layers of bureaucracy in the same setting. Importantly, this paper documents that workers with better personality traits respond more to our e-monitoring reform. This positive interaction suggests the possibility that improving selection and incentives in tandem can drive larger performance improvements than reforms that target either margin individually. Previous research largely focused on only one of these potential margins at a time.

Election Fairness and Government Legitimacy in Afghanistan (JEBO, 2019) complements this strand by showing that improving the informational integrity of service delivery—in this case, elections—can enhance state legitimacy even in fragile states. In a large-scale field experiment, we randomly implemented a fraud-reducing intervention during Afghanistan's 2010 parliamentary elections and found that improvements in procedural fairness increased citizens' willingness to comply with government authority and bolstered positive attitudes toward the state. A key contribution of this paper is to demonstrate that electoral integrity can causally affect legitimacy-enhancing attitudes, even in a setting with widespread distrust and weak formal institutions. The results underscore how low-cost, technology-enabled monitoring can improve governance by altering citizen perceptions of the state.

Information in private markets: The second strand of my work continues to leverage mobile networks to improve information flows, but with a focus on private decision-making. This strand emphasizes that informational interventions can improve consumer decision-making and market efficiency, but as with the above improved efficiency may require additional constraints.

No Bulls: Asymmetric Information in the Market for Artificial Insemination in Pakistan (*JDE*, 2023), demonstrates that providing farmers with crowd-sourced veterinarian price and service quality information can improve subsequent service delivery. This study differs from previous evaluations of the effect of information on markets with only a price channel, where changes in prices are pure transfers and any social welfare gains must come from increased market efficiency. In this study, while prices improve some, the largest changes are in service quality, suggesting large social welfare gains.

Expectations and Adaptation to Environmental Threats (EJ, conditionally accepted), demonstrates using cutting-edge incentive-compatible elicitations that urban residents

of Lahore, Pakistan, value air pollution forecasts provided via SMS and that they act on these forecasts to improve pollution avoidance. Perhaps the most novel contribution of this paper is that our experiment shocks beliefs not only through subjects' information sets (as prior studies have done), but also through their human capital. To do so, we designed an in-person training to improve general forecasting performance across all domains, which we cross-randomized with our information treatment. Interestingly, we find information and human capital are substitutes in subjects' forecast production functions in this context, suggesting the effects of information may be limited as levels of human capital rise. A follow-up study, *Beliefs, Signal Quality, and Information Sources: Experimental Evidence on Air Quality in Pakistan* (Under Review), finds that citizen demand for air pollution information does not depend on whether the government or an NGO is providing the information, despite citizens believing government forecasts are lower accuracy.

The spread of (mis)information: A social media experiment in Pakistan (Under Review), highlights an important challenge when trying to use social networks to spread public health information—greater platform moderation of health misinformation lowers exposure to that misinformation but also lowers exposure to useful information via decreased platform usage. One of the key contributions of this paper is in how it makes this point–to our knowledge, this is the first publicly available experiment that fully controls access to misinformation across an entire social media platform.

The Impact of Mobile Phones: Experimental Evidence from the Random Assignment of New Cell Towers (Under Review), provides experimental evidence that mobile network access significantly improves household welfare in the Philippines. The study makes two key contributions. First, we are the first to randomize the placement of cell towers, avoiding the endogeneity concerns that limit earlier work relying on natural network rollouts. Second, the study's prospective design allows for the collection of rich pre- and post-treatment data across multiple outcomes, unlike prior studies that focus narrowly on measures like prices or consumption. This broader data enables us to document several channels through which mobile access improves welfare, including through increased remittance flows to newly-connected households, increased income from temporary migration for work, and increased income from local entrepreneurial activities.

Historical and political drivers of public service delivery: The last strand of my work leverages technology-enabled information for retrospective research on the historical and political drivers of public service delivery..

In *Extending the Formal State* (*Economica*, 2024), co-authors and I document, leveraging the Green Revolution's uneven effects on agricultural productivity across

Pakistan's territory for identification, that a simple cost-benefit decision rule can explain consequential shifts in when and where the formal state governs within its territory. This paper contributes to an economic history literature on the initial choice to govern a space during colonial times as well as to a contemporary literature studying changes over time in state presence within internationally-recognized borders. Our novel contribution to the literature on state development is to provide concrete evidence that technological change can lead to ungoverned spaces being folded into country's cores without civil war or serious violence.

In *Can Political Alignment Be Costly?* (*Journal of Politics, a top-3 political science journal*, 2020), co-authors and I show that political alignment between local and provincial governments—typically assumed to improve coordination—can lead to greater use of state resources for patronage, or in this case to more doctors being paid a salary not to show up to work across rural Pakistan. One novel contribution of this paper is that it shows that even in the presence of high-powered democratic incentives in the form of political competition, citizens can be worse-off because of perverse political incentives.

Central research contributions: Taken together, my research makes five central contributions. First, it shows that simple mobile-based platforms can effectively collect and aggregate otherwise diffuse information in real time. Second, it finds strong demand for this information from both public officials and private citizens, with positive implications for governance and market outcomes. Third, it demonstrates that the impact of information is shaped—sometimes constrained—by underlying political and institutional contexts, including patronage and personnel dynamics. fourth, my work highlights how evolving forces such as social media, misinformation, and climate change are reshaping the channels through which information affects behavior. And finally, my work demonstrates that, while it is central these days, historically information has not been the only driver of changes in public service delivery; technological change more broadly as well as political institutions are consequential.

Broader research relevance: Across all of these projects, my research has relied on large-scale, multi-year field experiments that involve close collaboration with government, NGO, and academic partners. These partnerships are essential to designing interventions that are both policy-relevant and grounded in institutional realities in contexts like Pakistan. As an example of the policy relevance of this work, the health e-monitoring platform discussed above was, after a presentation of our evaluation results to the Chief Minister of Punjab, made policy and the platform remains in use by the Health Department today. To date, I have secured over $1.6 million in external funding as a PI or Co-PI to support this work. Large project teams also naturally support cross-disciplinary collaboration—I have published with political

scientists, information scientists, computer scientists, and other engineers, including several papers in high-visibility information communication technology (ICT) conferences. My cross-discipline expertise has been recognized as I was invited to co-edit and write a case-study for the Digital Governance Chapter of *An Introduction to Development Engineering: A Framework with Applications from the Field* (Springer, 2023).

COVID-19's research impacts: Given the long project timelines required to design, fundraise for, implement, and evaluate interventions, the need for original, in-person data collection, and the heavy emphasis on stakeholder engagement, my research was also especially affected by the COVID-19 pandemic. Several of my active projects were delayed or disrupted, including one that had to be abandoned due to pandemic-related challenges. Despite these setbacks, I have continued to invest in sustaining my research partnerships and rebuilding momentum across my field portfolio and have a full pipeline once again.

Research pipeline: Looking forward, I am expanding my agenda along two dimensions. First, I am moving beyond simple information interventions to interventions that provide information *and* increase the scope for citizen response to that information. For example, an on-going project with J-Pal and World Bank funding seeks to provide parents with information about the effects of air pollution on their children's learning and the opportunity to invest in clean air for their children's classroom (a classic public good). Second, I am working to scale-up past interventions while grappling with the political economy challenges my past work has identified to increase the likelihood of the scale-up's success. In an on-going project with IGC funding, co-authors and I are working with Punjab, Pakistan's Environmental Protection Department to not only scale-up our air pollution forecast system for the entire city of Lahore but also to build a second arm of the system aimed at increasing government bureaucrats' effectiveness at enforcing air pollution regulations.

Conclusion: I am excited to continue to research at the intersection of development economics, political economy, and information communication technology in the years to come. The driving goal of my research is to improve the livelihoods of the world's poor, through designing, rigorously and appropriately testing, and understanding the individual, institutional, and political limitations to new interventions that leverage today's rapidly improving technology.

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