I am an applied microeconomist interested in the bidirectional relationship between health and economic development. In what ways does the health burden faced by a given community matter for its economic development and well-being, in both the short and long run? In turn, what are the historical and contemporary determinants of a given community’s health level? I consider a variety of contexts and use different methods and data sources to answer these questions, often drawing on historical episodes, at times exploiting recent policy changes as “natural experiments”, and more recently conducting a randomized controlled trial. Below I describe my two major streams of research: (1) identifying how the infectious disease burden shapes socioeconomic outcomes; and, (2) identifying how historical abuses and policies affect today’s health behaviors and hence outcomes.

1. From health to wealth
Economists have long been concerned with understanding the distribution of socioeconomic outcomes such as wealth and education. Leading hypotheses for understanding the wealth distribution over the long run includes geographic endowments, institutional and policy environments as well as cultural differences. These explanations are often presented as competing, though a more nuanced view has emerged that allows for interplay between them.

Empirical research aimed at exploring such linkages is still in its infancy. It must overcome the twin challenges of data acquisition and plausible identification; often a more daunting task in poor countries. An historical lens is useful to informing this debate for two main reasons. First, initial endowments might have persistent though indirect effects via an institutional or cultural intermediary. Evidence limited to contemporaneous correlations may miss such linkages. Second, historical natural experiments can be leveraged to explore how developed economies escaped Malthusian dynamics.

In The Effect of the TseTse Fly on African Development (American Economic Review, 2015), I explore how a geographic endowment affects historical and modern-day outcomes. The TseTse fly is unique to the African continent and transmits a parasite harmful to humans and lethal to livestock. By limiting the use of domesticated animals in transport and agriculture, and inhibiting the adoption of animal-powered technologies, the fly has long been hypothesized to have wide-ranging effects on historical Africa, although without rigorous evidence. I identify the TseTse by constructing an index for fly survival based on physiology and growth modelling, then combine this index with ethnographic data. I find that TseTse-suitable areas had an increased reliance on shifting agriculture and slavery and were less centralized and urbanized historically. The evidence suggests that current economic performance is affected by the fly via precolonial political centralization (i.e. an institutional channel) and not directly from disease.

In The Gendered Spillover Effect of Young Children’s Health on Human Capital: Evidence from Turkey (in draft form) I study how a 1985 vaccination campaign for under-five children affected the educational outcomes not only for the targeted children, but also of their older siblings. I find spillover effects accrue exclusively to adolescent girl siblings. These findings are consistent with predictions from a standard intrahousehold model of time allocation in the presence of a gendered division of household labor. The results suggest technologies and policies that improve the health of young children may have the added benefit of improving educational outcomes for their older sisters.
To explore the external validity of the results, as well as reach a distinct yet influential audience, I alongside colleagues in the Stanford Medical School (Paul Wise, Gary Darmstadt, Anlu Xing and Eran Bendavid) expanded the analysis to 38 developing countries and published in a medical outlet. In, *Childhood Illness and the Gender Gap in Adolescent Education in Low- and Middle-Income Countries* (*Pediatrics, 2017*), we study whether the gender gap in adolescent education widens in response to illness shocks among young children. We use a household fixed effects approach, and find the gender gap increases by about 50% in the setting of frequent child illness.

2. Determinants of health

A second stream of my research concerns the determinants of health levels. A number of my papers leverage history to understand how events and policies contribute to health inequalities. I complement these with contemporary explorations of the barriers in health-seeking faced by minorities in the United States.

With Claudia Goldin, (Harvard Department of Economics) in *Watersheds in Child Mortality: The Role of Effective Water and Sewerage Infrastructure, 1880 to 1920* (accepted, *Journal of Political Economy*) we explore the first period of sustained decline in child mortality. Using detailed data from Massachusetts, we provide estimates of the independent and combined effects of clean water and effective sewerage systems on health. We find the two interventions were complementary and together account for approximately one-third of the decline in under-five mortality. Municipalities heavily populated with Irish-born immigrants gained the most from the interventions. Our findings are relevant to the developing world and suggest that a piecemeal approach to infrastructure investments is unlikely to significantly improve child health.

In *The Causes and Consequences of Nativism: Evidence from the Know-Nothing Party* (in preparation, slides available) with Greg Niemesh (Miami University, Department of Economics) and Katherine Eriksson (University of California Davis, Department of Economics) we combine detailed vital statistics data from Massachusetts with newly discovered data on municipal votes for the Know-Nothing gubernatorial candidate from the 1850s to probe what led to the rise and fall of the staunchly anti-Catholic party in the Commonwealth. We then probe its effects on the health and wellbeing of Irish immigrants.

Historical abuses can also shape health behaviors and outcomes. In joint work with Marianne Wanamaker (University of Tennessee) *Tuskegee and the Health of Black Men* (*Quarterly Journal of Economics, forthcoming*), we study the arguably most infamous case of medical exploitation in US history. We identify the study’s effects using an interacted difference-in-difference-in-differences model, and find that the disclosure of the study in 1972 is correlated with increases in medical mistrust and mortality and decreases in both outpatient and inpatient physician interactions for older black men. Our estimates imply life expectancy at age 45 for black men fell by up to 1.5 years in response to the disclosure, accounting for approximately 35% of the 1980 life expectancy gap between black and white men and 25% of the gap between black men and women.

The findings from the Tuskegee paper motivated a field study I designed in order to test potential policies to improve health outcomes in settings of high medical mistrust. With Grant Graziani (PhD candidate, UC Berkeley) and Dr. Owen Garrick (CEO Bridge Clinical Research, Oakland), I am
carrying out a study in the East Bay entitled, *A Randomized Trial to Identify the Effects of Provider Race on the Health Behavior of Black Men*. We are investigating whether diversity affects efficiency in healthcare by randomizing African-American men recruited from local barbershops to white or black male doctors and measure take-up of a suite of recommended preventative services. We are cross-randomizing physician race with incentives in order to test whether race concordance and incentives are substitutes or complements. In 2016 we conducted a successful pilot funded by SPECTRUM and in 2017 received the Award for Outstanding Community Partnership from Stanford. We have enrolled over 800 participants as of December 2017.

I am working on two other projects that relate to mistrust but leverage natural instead of experimental variation. In *The Spillover Effect of Deportation Fear: Evidence from Secure Communities* (in preparation, slides available) with Crystal Yang (Harvard Law School) we use the ramp up in detainers issued as a result of Secure Communities to estimate the effect of aggressive immigration policy on sign-ups for the Affordable Care Act, as well on food-stamps and health seeking behavior. In *Racial Bias in Diagnosis and Treatment* (in preparation) with Ebonya Washington (Yale Department of Economics) we use the quasi-random assignment of physicians to patients in the emergency room to estimate whether there is bias in treatment or diagnosis of minority patients. We seek to identify institutional factors that might mitigate such bias.

3. Funding, Teaching, Advising, Clinical Work and Service

In my four years at Stanford, I have received generous research support from the National Institutes of Health (NIH) NICHD Career Development Award (“Infectious Disease, Technology and Mortality Convergence”, 2015-2018), the Bill and Melinda Gates Foundation (“Using existing data to investigate relationships between social norms and adolescent health behaviors and outcomes”) (2016-2018), and the Abdul Latif Jameel Poverty Action Lab, (“A Randomized Trial to Identify the Effects of Provider Race on the Health Behavior of Black Men”, 2017-2018).

I enjoy teaching and find it complements my research. I have served as sole instructor for two courses at Stanford. The first, which is cross-listed in Human Biology and Medicine (HUMBIO 124/MED 236) entitled, The Economics of Global Health and Infectious Disease, is a course I developed from scratch. The course introduces undergraduates majoring in health to economic principles, covers cutting-edge research in the economics of infectious disease and teaches students to critically evaluate studies. In the 2014-2015 academic year 79% (22 of 28) students responded to the request for evaluation. As an instructor, I received a mean of 4.6/5 (compared to an area mean of 4). For the 2016-2017 academic year, I received a mean of 4.5/5 with 61% of respondents describing the instruction as excellent. The second course I teach is cross-listed in Economics and Medicine (ECON 127/MED 262) and is entitled The Economics of Health Improvement in Developing Countries. I last taught this course in the 2016-2017 receiving instructor scores of 5/5. I guest lecture in graduate health economics and health policy course sequences. In 2016, I was selected to receive the Stanford Teaching Award for my Division.

As a citizen of Stanford’s community, I serve on Stanford’s Admission Committee for the Health Policy PhD program, organize speakers in Development Economics for the Department of Economics and in Health Policy for the Health Research and Policy Department. I have served on a Faculty Search Committee for the Department of Pediatrics. I perform clinical duties as an attending physician in infectious disease at Palo Alto VAHCS. I enjoy advising students across the University and am pleased to co-author medical publications with many of them (these publications are listed in my C.V.).