Research Statement for Rebecca Dizon-Ross

My research investigates how to improve health and education among disadvantaged populations. My first two strands of research examine two demand-side policy levers: providing incentives to improve health, and information to promote education. My third stream of work investigates the role of supply-side accountability policy. I conduct many of my projects in partnership with governments or other organizations. In addition to evaluating feasible policies that partners could scale up, the projects aim to shed light on economic models of behavior. My research speaks to several important policy goals, such as addressing the diabetes epidemic in India and the opioid epidemic in the US, and encouraging educational investments among disadvantaged populations in both developing countries and the US.

1 Incentives for health

Incentives are increasingly being used to encourage people to change their behavior in ways that improve their education and health. My work in this area has two main goals. The primary goal is to develop new insights about incentive design and test them in the context of incentives for health; a key theme I examine is how to improve incentive performance by customizing contracts based on beneficiary characteristics. The second goal is to improve our policy understanding of how to best use incentives, including evaluating incentives in new settings and investigating how to implement them in a scalable way.

1.1 Projects

One common rationale for providing incentives for behavioral change is to address present bias, since present bias can cause people to underinvest in behaviors with long-run benefits but short-run costs. However, it is not well understood how to tailor incentives for agents who are present-biased or heavily discount the future. In “Incentivizing behavioral change: The role of time preferences” (with Aggarwal and Zucker [1]), we develop new insights on how to tailor incentive contract design for impatient agents, which we implement through a randomized controlled trial (RCT) incentivizing exercise among diabetics in India. We find that tailoring incentives for people with high discount rates over their own future effort makes the incentive program more effective. However, tailoring incentives for those who have high discount rates over the future receipt of payments does not, reflecting the fact that most people have relatively low discount rates over payments in our setting.

To tailor incentives for people with high discount rates over effort, we develop a novel prediction. While there was already one solution (pre-commitment) for motivating agents who are present-biased and aware of it (“sophisticated”), one exciting aspect of our insight is that it is also effective for those who are present-biased but unaware of it (“naive”). Recent evidence suggests naivete is common. Our insight is that making the contract “dynamically non-separable” should improve the relative efficacy of incentives for those with high discount rates over effort. By “dynamically non-separable,” we mean that the incentive paid for
action in a given period depends on the actions in other periods. For example, the contract could pay an agent for a daily action (in our case, walking 10,000 steps in a day) if and only if she performs that action at least five days this week. The intuition for why this type of contract works better for agents with high discount rates over effort is that, when the agent decides whether to engage in the action on day 1, she compares the incentive to the present discounted cost of engaging in that action every day this week. That cost will be lower for agents who discount the future more heavily, making them more likely to comply. Consistent with this prediction, we find that dynamically non-separable contracts meaningfully improve incentive performance for those with high discount rates over effort. In contrast, we find that increasing the frequency of payment – which theoretically should improve performance for agents impatient over payment – has limited efficacy on average.

Implementing the incentive program through an NGO arguably would have given us more control and flexibility to test our predictions; nonetheless, we chose to partner with the Government of Tamil Nadu (GoTN), an Indian state with roughly 10 million diabetics, so that the findings would more likely impact actual policy on a large scale. That benefit is being realized: GoTN has expressed interest in scaling the program that we designed and evaluated in [1] to their full population. We are working with them to think through how to implement the program at scale (ongoing work with Zucker, [2]).

To inform the scale-up, we have also started a second project focused on an important and unanswered question about incentive design for behavioral change: How can one make incentives cost-effective in populations where baseline levels of the incentivized behavior vary widely? The challenge is that the policymaker only wants to pay a beneficiary for her “marginal” behavior (i.e., behavior she would not have engaged in absent the program), but that is difficult when levels of “infiramarginal” behavior (i.e., what would have occurred even absent the program) vary meaningfully and unobservably across beneficiaries. In “Customizing incentives” (ongoing work with Zucker, [3]), we will evaluate two methods for solving this problem (i.e., for increasing the amount of marginal behavior created relative to the cost of incentives paid out). Both methods aim to customize the contracts so that beneficiaries who would walk more in the absence of the program are given higher step targets to earn incentives. The first method uses machine learning to predict counterfactual walking and assigns exercise targets based on predicted exercise. While machine learning is becoming widespread for targeting programs (not just incentives), it may not be effective in settings like ours where the set of predictive variables available to the policymaker is small. We thus horse-race machine learning against a second method suggested by mechanism design. We create an incentive-compatible menu of contracts and allow agents to choose, with the goal of getting agents with higher counterfactual walking to select into contracts with higher exercise targets in exchange for higher payments. We will compare these methods
against each other as well as against a non-customized approach, and test predictions about the types of settings in which each method will work better.\footnote{For example, an incentive-compatible menu should be more effective when beneficiaries have better information about their own levels of inframarginal behavior.} We have full funding and are wrapping up piloting and preparation, with the full experiment launching in March 2019. See the timeline in the appendix for details on this and other projects with ongoing fieldwork.

Another project examines incentives in a different health context: the opioid epidemic in the US. Unlike for chronic disease, where there is scant previous evidence on the efficacy of incentives, researchers have repeatedly shown that incentives are a powerful intervention for treating substance use disorders (SUDs). However, incentive programs for SUDs have not been scaled up widely to date. A key barrier is that, while the benefits are largely enjoyed by patients and taxpayers, there are substantial logistical costs that are typically borne by clinics, such as in-person monitoring of behavior by clinic staff. In “Reducing opioid use by incentivizing inputs and outcomes” (ongoing work with Zucker, \cite{Zucker2019}), we evaluate a novel incentive delivery approach: remotely monitoring behavior through a mobile-phone application, which makes the program uniquely low-cost and scalable. Our RCT will assess this app-based tool’s effects on drug use. We also plan to use the treatment as a source of exogenous variation in opioid use to provide some of the first causal evidence on the effect of opioid use on labor market outcomes.

In \cite{Zucker2019}, we also examine how to customize what is incentivized: the outcome of interest, or inputs that contribute to that outcome. We will evaluate two different incentive schemes through the mobile-phone app, one incentivizing “inputs” to abstinence (such as therapy attendance or medication adherence), and one incentivizing the “outcome” of abstinence. We will then test theoretical predictions for how the optimal choice of whether to incentivize inputs vs. outcomes varies with individual traits.\footnote{Incentivizing inputs may work better than incentivizing outcomes for agents who are more risk averse or who have less knowledge of the production function for abstinence, for example.} We have secured funding and partnerships with the app provider and clinical site; the pilot and RCT are both launching in 2019.

\section{Information for education}

Information provision is inexpensive, which makes it a promising approach to improve educational investments. To design beneficial information interventions, one first needs to understand how households make decisions about educational investment. This line of my research has two goals: first, to identify and solve information “frictions” affecting educational investment; and second, to advance our understanding of the household-level decision-making process about education, which can inform educational policy more broadly.

\subsection{Projects}

Both goals of this research agenda grow from my first project in this area, “Parents’ beliefs about their children’s academic ability: Implications for educational investments” \cite{Brick2018}.
Although it is widely believed that one reason poor households remain poor is that they lack information, the majority of the existing evidence concerns information that is difficult to access (i.e., that even richer households may not have or use), such as the economic returns to education. This project shows that the poor are sometimes also unable to take advantage of information that seems accessible and available to all: in particular, information on students’ performance in school, which is delivered frequently by schools to parents. [5] finds that many parents in Malawi want to customize their educational investments to reflect their child’s academic performance, but that they have inaccurate beliefs about their children’s performance which prevent them from doing so. I then use a randomized experiment to show that a simple intervention providing information directly and clearly to parents leads them to update their beliefs about their children’s ability and make important adjustments to their investments: they increase the school enrollment of their higher-performing children, decrease the enrollment of their lower-performing children, and choose educational inputs more closely matched to their children’s academic level. Finally, I show that belief inaccuracies are worse—and the effects of providing information correspondingly larger—among poorer, less-educated parents. In developing countries, access to schooling has increased a lot, but large gaps in educational outcomes between the rich and poor remain; my findings point to information frictions as an important contributor to this inequality.

2.1.1 Understanding parents’ educational decisions

In [5], I show that providing information to parents about children’s academic performance has large impacts on their investments, especially among poor families. The implications for policy then depend on how parents make decisions about education, which I investigate in three projects. Using data collected for [5], [6] uses information shocks as a new method for identifying how parents’ investments depend on their children’s performance (i.e., whether they invest more or less in higher-performing children). This question of whether parents reinforce high achievement or compensate for low achievement is a core question in development economics and the economics of education, and the randomized information shocks offer a clean way to study the question.

Parents’ choice to reinforce or compensate depends on the interaction between the perceived education production function and their preferences. It is also useful to understand the preferences themselves. “(Not) playing favorites: An experiment on parental preferences for educational investment” (with Berry and Jagnani, [7]) estimates parents’ preferences for investing in their children’s education, finding that parents are averse to investing unequally across their children. Previous work in economics has generally conceptualized parents’ potential aversion to inequality between their children as an aversion to inequality in outcomes (educational attainment or earnings). Our paper introduces the potential that parents also care about equality in inputs (investments made in each child). We find that
aversion to unequal inputs is, in fact, the dominant preference in our setting. This is im-
portant because the two types of inequality aversion have different implications for how parents
respond to various policies. Methodologically, it is challenging to identify parents’ prefer-
ences using observational data as one needs multiple quasi-random shocks to the returns to
educational investment. We overcome this challenge by using a lab-in-the-field experiment
that randomly varies the returns to investment, allowing us to quantify the weights parents
place on maximizing the returns to investment (total household earnings), equalizing their
children’s outcomes, and equalizing their children’s inputs. Interestingly, we find no evidence
of an aversion to inequality in outcomes. Parents’ aversion to giving their children unequal
inputs is quantitatively large; it causes them to forgo substantial payments and dampens
their responsiveness to the returns to investing in their children.

Mothers are widely believed to have a higher propensity to spend on children’s edu-
cation than fathers; in “Why do mothers and fathers spend differently on children’s
education and health” (with Jayachandran, [8]), we investigate why. The implicit assump-
tion in the literature is that the explanation is preferences – that mothers are more altruistic
than fathers towards their children. However, there are other potential explanations. For
example, mothers could earn a higher return on investments in their children’s education
because they live longer and are more dependent upon their children in old age. Many poli-
cies in developing countries target mothers because policy-makers believe that mother-father
gaps exist; understanding the reasons for these gaps can help us optimize these policies. We
assess reasons for the mother-father gap using survey data collected from 1,000 households
in Uganda. Our evidence suggests that the main reason is not altruism but rather old-age
support: mothers benefit more from children’s adult earnings, which gives them a stronger
incentive to invest in their children’s human capital.

2.1.2 Information frictions in education and labor market decisions

“Improving job matching among youth” (ongoing work with Ahn and Feigenberg [9])
examines whether youths’ inaccurate beliefs about their job market competitiveness hinder
their transition into the labor market. Many youth struggle with this transition, resulting in
high youth unemployment that is a major social and economic problem in the Middle East
and North Africa (MENA). Unemployment is higher among more-educated youth than less-
educated, potentially because the growth in the supply of educated workers has outpaced
demand for educated workers, which could lead youth to be overly optimistic about the jobs
they might obtain. Youth applying to jobs outside their reach and becoming discour-
aged could reduce their later job search intensity, entrenching unemployment. In addition,
untargeted applications can create “congestion,” with employers having to screen many in-
appropriate applications. In [9], we show that job seekers’ inaccurate expectations about
their job market competitiveness impede their job search efforts, potentially contributing
to unsuccessful transitions into the labor market. We partner with the largest online job portal in the MENA region to evaluate an intervention delivering information about job seeker competitiveness to job applicants. At baseline, applicants submit many applications to jobs that they are not competitive for, causing congestion. Randomly providing information to job seekers about their fit for particular jobs causes them to adjust and apply for jobs they are better suited to. The effects are largest among highly educated entry-level workers, consistent with our hypothesis that these workers’ over-optimism impedes their job search efforts. We are now conducting a follow-on experiment to understand whether congestion from poorly targeted applications hinders employer-side search and job matching.

Another of my projects investigates whether inaccurate beliefs about one’s access to social safety net programs affects educational investments. The Supplemental Security Income program (SSI) provides cash payments to the families of 10% of the children living in poverty in the US. Many of these children have a 70% likelihood of being removed from SSI at age 18, but the available evidence suggests that their families often expect the SSI benefits to continue for their children’s full lives. This may cause them to underinvest in their children’s education. In ongoing work with Deshpande [10], I am working with state and federal agencies to conduct an RCT that informs some SSI families of the likelihood of removal at age 18, and estimates the effect on education and employment. “How do expectations about government benefits affect human capital investment?” [10], thus, provides evidence on an important question: Do expectations about the availability of government benefits in adulthood affect educational investments in childhood? Although substantial evidence shows that the social safety net for adults affects contemporaneous (adult) effort and investment, whether it also impacts previous (childhood) investments has not been explored. Our contribution is to quantify the moral hazard caused by expected future access to the safety net, specifically through reduced investment in education. We have been securing funding and partner agreements since 2015, and are launching fieldwork spring 2019.

3 Accountability among supply-side providers

Interventions targeting demand-side behavior can be very powerful but are only effective if implemented well, which relies on having a well-functioning supply side. Unfortunately, the conventional wisdom is that the supply side often operates poorly, especially for the most disadvantaged beneficiaries. One challenge to supply-side effectiveness is low accountability among providers. The final strand of my research examines supply-side accountability and how accountability policy affects providers and beneficiaries.

3.1 Projects

“How does school accountability affect teachers? Evidence from New York City” [11] examines school accountability policies, which have been a central focus of education reform efforts in the US since the mid-1990’s. An oft-cited concern with these policies is that,
by holding schools accountable for student achievement, they could cause good teachers to leave the low-performing schools that typically serve more disadvantaged students. Using data from New York City, which assigns accountability grades to schools based on student achievement, I perform a regression discontinuity analysis that instead finds evidence of a more hopeful story. At the bottom end of the school grade distribution, where the accountability system places more pressure, receiving a lower school accountability grade at the beginning of the year actually benefits a school at the end of the year through its impacts on the teacher labor market. Specifically, receiving a lower accountability grade decreases teacher turnover, especially for high-quality teachers, and increases the average quality of joining teachers. The explanation appears to be that receiving a low accountability grade prompts principals to increase their effort, which teachers value.

“Governance and the effectiveness of public health subsidies: Evidence from Ghana, Kenya, and Uganda” (with Dupas and Robinson, [12]) examines provider accountability in the context of public health clinics distributing subsidized health products. Subsidized distribution is a key strategy for rapidly increasing coverage of essential health products in poor countries. There is widespread concern in the policy community, however, that low accountability among health sector providers will compromise the success of these programs. We performed innovative audits of bednet distribution programs in three countries (Ghana, Kenya and Uganda) to investigate agency problems in the allocation of subsidized products. [12] finds that, overall, accountability among health workers is much higher than expected, and that as a result subsidized distribution through public clinics is a cost-effective way to deliver products to poor families. We also find that implementing simple tweaks to improve accountability (e.g., audit threats) do not improve provider behavior, suggesting that the remaining barriers to perfect implementation may be prohibitively costly to lift. We discuss several reasons why baseline performance may be higher than expected, including that health workers appear positively selected in terms of altruism and intrinsic motivation.

Both accountability projects described above find results at odds with the conventional wisdom about supply-side functioning, highlighting the importance of assessing its functioning before implementing new policies. In our ongoing work on scaling incentives-for-exercise in India [2] (with Zucker), we will begin by measuring baseline performance of health care providers charged with implementing the program. If performance is low, GoTN is interested in evaluating a supply-side program that incentivizes clinics to improve patient outcomes; we would investigate the effects on the overall performance of the clinic and on the efficacy of our demand-side incentive-for-exercise scheme. Provider accountability is particularly important for programs like ours that are customized at the individual level, since customization gives providers scope to distort beneficiaries’ program assignments towards ones that are better for providers (e.g., more scope for extracting money) but worse for social welfare.
Projects by the author


