

**The Behavioral Economics of Persistent Unemployment:
New Evidence on Search, Discouragement, and Wage Adjustments**
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(with Lynn Conell-Price, PhD Candidate, Carnegie Mellon University)

Reducing long-term unemployment, which continues to hover near historical highs, has emerged as one of the chief policy fronts in the fight against poverty. Studies have found that beyond being strongly correlated with economic hardship, persistent joblessness leads to diminished educational achievement of children (Rege, Telle, and Vortruba, 2011), reduced mental and physical health (e.g., Browning and Heinesen, 2012), divorce (Charles and Stephens, 2004), and diminished life satisfaction (Kassenboehmer and Haisken-DeNew, 2009). While standard theory positions unemployment as a mechanism through which markets match job seekers to suitable jobs (see Diamond 1982) a number of empirical trends—e.g., the sharp spikes in unemployment exits just prior to the exhaustion of unemployment benefits, the high prevalence of persistent unemployment, and low average levels of job search intensity (Krueger and Mueller 2010, 2015)—are not easily captured by this traditional framework. Recent research has suggested that these patterns might instead reflect psychologically informed departures from the conventional framework for evaluating optimal search. These departures include the influence of reference points on expectations of wage and consumption (DellaVigna et al., 2014), overly optimistic beliefs with respects to one’s earning potential (Spinnewijn, 2015), procrastination with respect to job search (DellaVigna and Paserman 2005), and biased beliefs about market conditions (Altmann et al., 2015). Search may also be shaped by factors not traditionally accounted for by economists such as diminished self-esteem, discouragement, and depression.

The proposed project reflects an attempt to understand the psychology of job search, and identify concrete policy strategies to improve its efficacy through two strategies—an analysis of the search patterns and resumes of several hundred-thousand online job seekers and a field study on search in collaboration with local job search agencies. Specifically, we aspire to use this proprietary data to document empirical patterns of job search— including search frequency, search wages, and search breadth—over the duration of unemployment, explore whether search intensity and wage expectations appear efficient with respect to unemployment exit, and experimentally test whether intervening to optimize search leads to improved outcomes. We see this work as having important implications for the design of psychologically informed policies aimed at improving the plight of the (persistently) unemployed.

Empirical Analysis of Search

A. Data. Our empirical analysis leverages a large, rich, and proprietary dataset on the job search behavior of several million US adults—of which several hundred thousand are unemployed— from 2008 to 2009. Obtained from a major online job search firm, the data includes daily-level aggregate search data on site visits, page views, and number of job search queries for 9.7 million users (nearly the universe of site users) and more detailed click-level data including details of jobs viewed, job applications, and job search queries, as well as site and job view durations for 3.2 million registered users. The data further includes a large set of individual level characteristics, taken from several hundred thousand resumes and user-registration information, such as job and salary history, future wage expectations, and demographic variables including education, age, ethnicity, and gender. The primary limit of the data is that it captures job seeking within a single mode of search.

B. Description of Search. Our initial goal is to provide novel descriptive evidence on job search—search frequency, wages searched, and the breadth of search with respect to geography and job type—over the course of unemployment. This exercise is critical for clarifying whether search is consistent with standard models of optimal behavior and builds on recent work by Krueger and Mueller (2015).¹ We characterize search, and its heterogeneity across job seekers, by examining raw data on search volume and wage outcomes over the UE spell, analyzing

¹ While our data tags unemployment status, we infer the UE start-date from most recent job listings from resumes and, for some share of our sample, by leveraging the Mass Layoff Statistics dataset (BLS), which records dates of establishment layoffs exceeding 50 separations.

residual search patterns after controlling for time and location specific shocks, and most importantly, leveraging the data's panel structure to examine within-subject search dynamics. As illustration, Figure 1 depicts preliminary patterns regarding exits from UE (as inferred by site inactivity after job application) for unemployed registered site users in 2009. Figures 2 and 3 plot preliminary patterns of (unadjusted) daily level search intensity and search wages for the registered unemployed users for 2008. While these plots do not control for compositional differences across the unemployment duration, they offer suggestive evidence as to low baseline levels of search and the relative inflexibility of search wages over the UE spell.

C. Wage Anchors and Insufficient Adjustment. Beyond documenting descriptive patterns of search, we aim to test whether search wages are overly sensitive to prior wage and whether wage adjustments are asymmetrically sensitive to positive, as compared to negative, information shocks. Our primary analysis will test directly for “stickiness” of wage expectations with approaches used in the forensic analyses of sports (e.g., Wolfers 2006) and corporate finance (e.g., DeGeorge, Patel and Zeckhauser 1999). The strategy involves identifying an asymmetry in the density of the distribution of search wages for job seekers in proximity to one's prior wage. We would then test whether the size of such asymmetries leads to lengthier unemployment spells—evidence consistent with overly sticky wage expectations. In a subsequent analysis, whose details we omit due to space constraints, we will use an event-study approach to test whether search wages are differentially sensitive to positive and negative shocks to labor-relevant information (e.g., economic indicators, news stories regarding state of the local/national economy, news of plant closings or new establishments, changes in the local supply of job listings) and household financial shocks (e.g., changes in gas prices).

Field Experiment on Job Search

A. Study Overview. The second phase of the project involves the design and administration of a field experiment to explicitly test whether intervening on job search leads to more rapid exit from UE. If experimentally increasing the frequency of search, modifying search channels, and expanding the distribution of search wages, accelerates exit from UE, then this offers perhaps the first causal evidence that job seekers routinely engage in sub-optimal search and some of the first field evidence on the specific psychological mechanisms underlying inefficient search. We anticipate enrolling ~1000 to 1200 low to moderate income, newly unemployed, job seekers in a paid field study. Client recruitment, and monitoring, will be done in collaboration with two non-profit, government contracted, job search and counseling centers—the Career Development Center (Pittsburgh) and JEVs Human Services for Career Development (Philadelphia). We also are working to secure a commitment from the PA DOL to link study participants to administrative records on wages and unemployment benefits.

B. Research Design. Participants will be asked to complete an initial baseline survey detailing their demographic and job background, expectations and beliefs about the job search process, and a range of psychographic assessments. In shorter, weekly, follow-up surveys, job seekers would be asked to log their search activities, reservation wage, expectations of outcomes, and measures of well-being and discouragement during the course of their UE spell. The weekly surveys, and additional communication by text and email, would be used to deliver information and incentives as specified by the subject's treatment arm. Specifically, (i) a control group would receive the survey but no additional guidance or financial incentives, (ii) a first treatment group would be aided in their search by receiving a weekly list of high-potential job options (generated through a algorithmic search device which we develop), (iii) a second treatment group would be incentivized to increase their search intensity by submitting at least a target number of applications among those provided, and (iii) a third treatment group would be encouraged to search for jobs within a specific wage range (reflected through the provided listings). These interventions would be cross-randomized with two additional treatments after an initial period. The first treatment would nudge clients towards a broader, and more efficient, set of search strategies (e.g., networking), while a second would encourage a mindset designed to reduce discouragement. The latter intervention follows the model of recent work on psychological mindsets and behavior change (e.g., Crum 2013). We intend to observe differential patterns of search, job outcomes, beliefs and psychological well-being for subjects across these treatments.

Budget for Preliminary Investigation and Tool Development

A. Preliminary Investigation and Tool Development

Given the complicated and extraordinarily wide-ranging challenges that characterize unemployment, we see three tasks as critical to the success of the field work. First, we are expending considerable efforts to understand the institutional detail facing the unemployed and to canvass insights from job search practitioners, as well as job seekers, about the psychological and economic challenges they face. This has involved a number of lengthy, in-person, conversations with practitioners, policy-makers, and job seekers, as well as more formal surveys, focus groups, and randomized scenario-based studies of practitioners and job seekers. Second, we are building a search and monitoring algorithm that will be used to identify and distribute appropriate job listings to clients in the study (drawing from national job search sites and the state's job search database) and will also track job views and job applications. Third, we intend to intensively pre-test interventions using convenience samples of the unemployed.

B. NBER HF Grant Budget - \$14.5k

We anticipate requiring a budget of approximately \$95k to 130k for the entire study which will be used primarily to fund human subject payments for participants (recruitment, baseline payments, and incentives), support for research assistance, and to offset minor expenses for our agency partner. We seek \$14k of funding from the NBER HF for the preliminary developmental and pre-test efforts outlined above. This includes \$2.5k to fund expenses for preliminary interviews and focus groups (250 subjects x \$10/subject), \$1.5k to fund survey of job search practitioners (100 subjects x \$15/subject), \$4.5k to fund intervention pre-tests (1500 subjects x \$3/subject), and \$6k for the development of our job search/monitoring tool.

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- Spinnewijn, J. (2015). Unemployed but Optimistic: Optimal Insurance Design with Biased Beliefs, *Journal of the European Economic Association* 13 (1), 130–167.
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Supplementary Figures

Figure 1. Survival by Inferred Week of Unemployment and Varying Definitions of Exit
(All unemployed registered users for 2009)

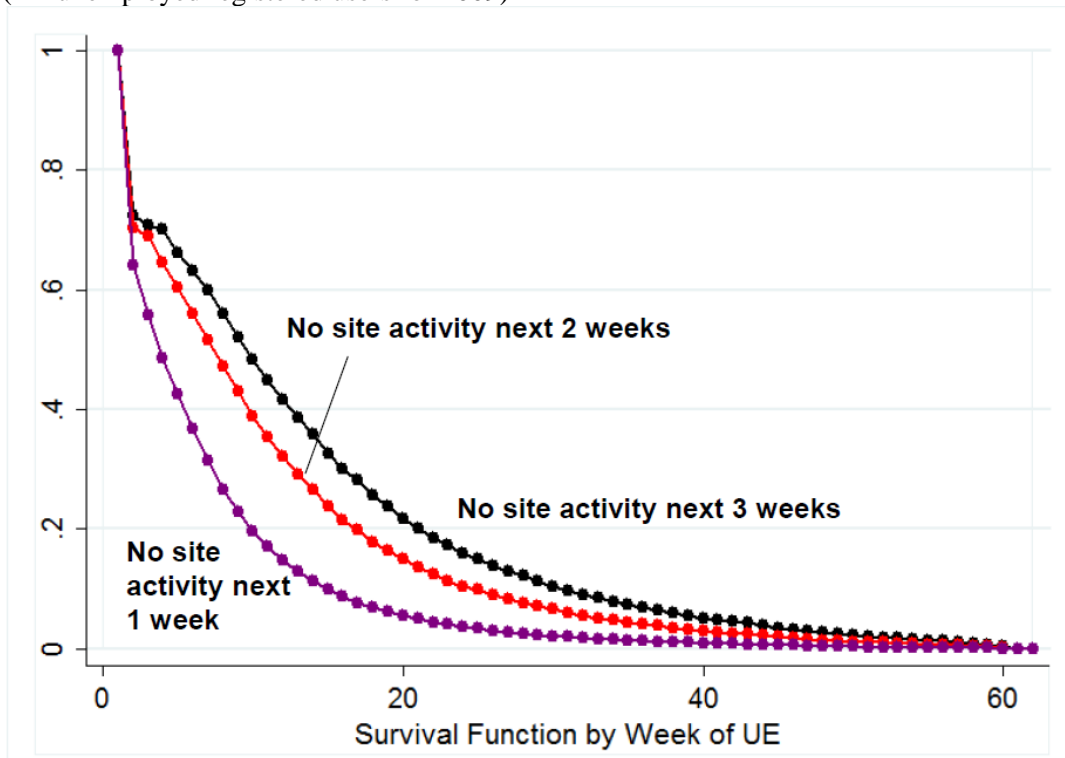


Figure 2. Job Search Duration by Income Over the Unemployment Spell (Unemployed registered users from 2009)

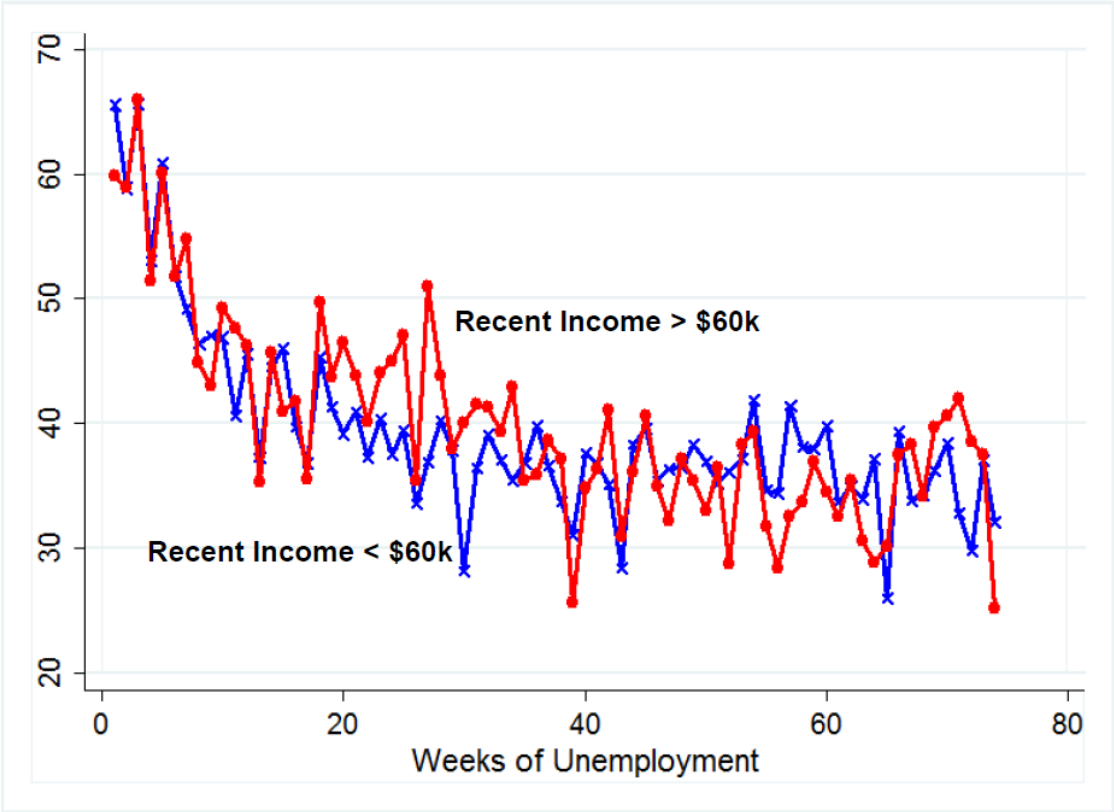


Figure 3. Search Wages by Income Over the Unemployment Spell
(Unemployed registered users from 2009)



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APPOINTMENTS

2012 to Present Assistant Professor of Economics, Department of Social and Decision Sciences, Carnegie Mellon
2016 to 2017 Visiting Scholar, Russell Sage Foundation
2008 to 2012 Adjunct Assistant Professor, University of Chicago, Booth School of Business (MOB Group)
2010 to 2012 Post-Doctoral Fellow, University of Chicago, Harris School of Public Policy (and NORC)

EDUCATION

2008 Ph.D., Economics, University of California, Berkeley
2000 A.B., Economics, Harvard University (magna cum laude)
1996 Jefferson High School (Valedictorian, USA Today All-Academic First Team; Research Science Institute)

TEACHING EXPERIENCE

Carnegie Mellon University, 2012 to Present

- Behavioral Economics in the Wild (Field evidence in behavioral economics)
- Causal Inference in the Field (Econometrics)

University of Chicago, Booth School of Business, 2009 to 2012

- Strategies and Processes of Negotiation

PROFESSIONAL AND POLICY EXPERIENCE

ADVISORY / CONSULTING / PANELS:

- Center for Disease Control (Diabetes Prevention), 2015
- Senator Warren Staff (Earned Income Tax Credit), 2015
- GAO (Financial Literacy), 2015
- Laura and John Arnold Foundation (Pre-trial Criminal Research), 2015
- Otsuka Pharmaceuticals (Medical Adherence), 2014 to 2015
- MDRC (School Choice, Non-Custodial Parental Support), 2015
- The Weather Channel (Emotions and Weather), 2013
- Department of Justice, Anti-Trust Division (Consumer Protection), 2010

CORPORATE/RESEARCH:

- Consultant, Mckinsey & Company, 2002 to 2002
- Research Assistant, U.C. Berkeley, Department of Economics, 2002 to 2004 (for Stefano DellaVigna)
- Research Assistant, Harvard Business School, 1997 to 1999 (for Josh Lerner)

PUBLISHED AND WORKING PAPERS

1. **Psychological Frictions and the Incomplete Take-Up of Social Benefits: Evidence from an IRS Field Experiment**
(w/ Day Manoli)

American Economic Review, Vol. 105, No. 11, pp. 3489-3529, 2015.

2. **Do Employees Make Sensible Health Insurance Decisions? Evidence from a Menu with Dominated Options**
(w/ George Loewenstein and Justin Sydnor)

Quarterly Journal of Economics, Revision Requested. NBER Working Paper No. 21160, 2015.

3. **Behavioral Economics and Public Policy 102: Beyond Nudging** (w/ George Loewenstein)
American Economic Review, Papers and Proceedings, Vol. 105, No. 5, pp. 396-401, 2015.
4. **Choosing a Health Insurance Plan, Complexity and Consequences** (w/ George Loewenstein)
Journal of the American Medical Association, Vol. 314., No. 23, pp. 2505-2506, 2015.
5. **Contrast Effects in Sequential Decisions: Evidence from Speed Dating** (w/ Ray Fisman)
The Review of Economics and Statistics, Vol. 96, No. 3, pp. 444-457, 2014.
6. **A Reassessment of the 'Defense of Parenthood'** (w/ Karim S. Kassam and George Loewenstein)
Psychological Science, Vol. 25, Issue 1, 2014.
7. **Driving Under the (Cellular) Influence** (w/ Vikram Pathania)
American Economic Journal: Economic Policy, Vol. 5, No. 3, pp. 92-125, 2013.
8. **Bored in the USA: Using Experience Sampling to Determine Boredom's Contextual and Demographic Correlates** (w/ Alycia Chin, Amanda Markey, Karim S. Kassam, and George Loewenstein)
Emotion, Revision Requested.
9. **Gender Differences in Experienced Love** (w/ Karim S. Kassam, Carey Morewedge, and George Loewenstein)
Psychological Science, Revision Requested
10. **The Costs and Consequences of the ACA and Prescriptions for Reform** (w/ George Loewenstein, and Shlomo Benartzi)
Behavioral Science & Policy, Revision Requested.
11. **The Impact of the 1990 Nutrition Labeling and Education Act on Attitudes and Behavior** (w/ Mark Patterson and George Loewenstein)
Under Review
12. **New Evidence on the Hedonic and Time-Use Consequences of Children** (w/ Karim S. Kassam, George Loewenstein, and Carey Morewedge)
Under Review
13. **Law and Order: Sequential Contrast Effects in Judicial Decisions**
University of California, Berkeley, PhD Dissertation, 2008.

PROJECTS-IN-PROGRESS

1. **Do Insurance Incentives Matter? Exploring the Effects of Incentives, Salience, and Feedback with a Field Experiment on Auto-Insurance in South Africa** (w/ Alison Bутtenheim and George Loewenstein)
2. **Information, Incentives, and Impulsivity in Food Choice: Evidence from a Field Experiment of Online Food Purchases** (w/ Vikram Pathania and Lynn Conell-Price)
3. **A New Measure of Media Bias and Strategic Coverage of Elections**
4. **Leveraging Behavioral Economics to Reduce Unemployment** (w/ Lynn Conell-Price)
5. **Does the Size of the Black-White Wage Gap Depend on Who's Asking? Evidence from the NLSY97** (w/ Dan Black, and Jeffrey Grogger)
6. **Under-Confidence and Goal Choice in the Labor Market: Evidence from 100,000 Employees and 250 Firms** (w/ George Loewenstein)

7. Under-Confidence in Refund Expectations among the Poor: Evidence from 15,000 Taxpayers

(w/ Caitlin Drummond)

8. The Economic and Psychological Determinants—and Deterrents—of Tax Compliance: An IRS Field Experiment with Paid Tax Preparers and EITC Filers

9. The Psychological and Economic Determinants of Wage: Evidence from Micro-data and a Field Experiment on Job Search (w/ Tanya Menon)

MEDIA

Driving Under the (Cellular) Influence:

BBC News, Daily Mail, Freakonomics (Blog and Podcast), Marginal Revolution, The New York Times (Technology Blog), Bloomberg, Politico (Blog), CBS Radio (St. Louis and SF Affiliates), Fox TV (SF Affiliate), San Francisco Examiner, National Public Radio (Michael Krasny Show), Chicago Tribune, Macleans, ABC Australia

A Reassessment of the ‘Defense of Parenthood’:

The New Yorker, The New Scientist

Contrast Effects in Sequential Decisions: Evidence from Speed Dating:

Marginal Revolution

Do Employees Make Sensible Health Plan Decisions:

New York Times, Wall Street Journal, Time, National Public Radio (Online), Huffington Post, CNBC, Slate

Psychological Frictions and the Incomplete Take-up of Social Benefits:

Vox, Bloomberg, Marginal Revolution

Invited Columns: “Dismal Science No More?” The Financial Express (India), 6/09 [A column discussing the policy implications of psychological and economic research on hedonics and subjective well-being], “An Immodest Truth,” The Financial Express (India), 9/09 [A column discussing the role of overconfidence in shaping everyday decisions as well as broader financial and political outcomes]

GRANTS AND FELLOWSHIPS

2016	Visiting Scholar, Russell Sage Foundation
2015	British Academy Grant (w/ Vikram Pathania) (\$16,000)
2015	PNC Financial Decision-Making Research Grant [Benefit Elections] (\$47,000)
2014	Penn-CMU Roybal NIH Grant [Food Choice] (\$34,500)
2014	Progressive Insurance – Funded Research Collaboration (\$42,000)
2013	Penn-CMU Roybal Center on Behavioral Economics and Health Pilot Grant (< \$5,000)
2013	PNC Financial Decision-Making Research Grant [Emotions] (\$40,000)
2013	NBER Household Finance Group Grant (\$17,000)
2012	Berkman Faculty Development Grant, Carnegie Mellon University (\$5,000)
2011, 2010, 2009	University of Chicago, Booth School of Business, Research Grant (\$10,000)
2009	Russell Sage Foundation, Small Grant in Behavioral Economics (\$5,000)
2008	Institute of Business and Economic Research Grant (< \$5,000)

INVITED PRESENTATIONS

2016	Boston University/Harvard/MIT Health Seminar, UCLA – Anderson School of Management
2015	American Economic Association, Brookings Conference on Behavioral Economics, BSPA Inaugural Conference, Case Western University, GAO Financial Literacy Working Group, Laura and John Arnold Foundation Roundtable (Pretrial Criminal Justice Research), LDI CHIBE Behavioral Economics and Health Symposium, Russell Sage Behavioral Labor Economics Working Group, University of Pennsylvania – Wharton
2014	London School of Economics, Oxford University, Carnegie Mellon University, LDI CHIBE Behavioral Economics and Health Symposium (University of Pennsylvania), U.C. Berkeley (Economics Dept)
2013	Society of Experimental Social Psychology Annual Meeting, Consumer Financial Protection Bureau
2012	Behavioral Economics Annual Meeting (BEAM), Cornell University, Carnegie Mellon University, Purdue University, University of Maryland, University of Wisconsin, Madison, Association for Public Policy Analysis and Management (APPAM) Annual Meeting
2011	University of Chicago, Booth School of Business (Micro Economics), University of Chicago, Harris School of Public Policy, U.C. Berkeley (Public Finance), U.C. Berkeley (Psychology & Economics), Chicago Federal Reserve (Applied Economics), NCTC National Conference, University of Chicago, Booth School of Business (MOB)
2010	University of Chicago, Booth School of Business (MOB), IRS-EITC All Employee Conference
Pre- 2010	Harvard Business School (NOM), University of Chicago, Booth School of Business (MOB), U.C. Berkeley, Goldman School of Public Policy, U.C. Berkeley (Psychology & Economics), U.C. Berkeley (Public Finance)

REFEREE SERVICE

American Economic Review, Journal of Political Economy, Quarterly Journal of Economics, Psychological Science, Review of Economics and Statistics, Journal of Labor Economics, Journal of the European Economic Association, Journal of Public Economics, Management Science, Journal of Health Economics, Journal of Human Resources, Journal of Urban Economics, Sloan Foundation.