2016 SBST Project Abstracts

SBST seeks, where feasible and cost-effective, to implement applications of behavioral insights to Federal policies and programs as demonstration projects, in order to generate evidence about the effectiveness of these applications and learn what works, what works best, and what does not work. Often, these projects implement and evaluate the impact of behavioral insights directly within Federal Government programs using rapid, rigorous, and low-cost methods.

The project abstracts collected below provide additional information on the design of, and results from, projects completed by SBST through mid-2016. Wherever possible, SBST implemented these projects as randomized trials. Where random assignment proved infeasible, SBST sought to derive credible estimates of effects using the best, most practical non-experimental identification techniques applicable in each circumstance. Specific methods for each project are detailed below.

The abstracts below include:

Agency Objective. Encourage service members to make an active choice to enroll—or not—in Thrift Savings Plans during a reset moment, in order to promote higher rates of enrollment.

Background. The Federal Government, including the military, operates a savings program for its employees known as the Thrift Savings Plan (TSP).[1] Roughly 56 percent of the over 1.3 million active duty service members in the Armed Forces are not currently enrolled in any TSP plan, and only around 1 percent newly enroll each month.[2] The success of *active choices* in private sector workplace savings—where employees have to actively choose whether to contribute or not—suggests that many service members might enroll if they were required to choose to enroll (or not).[3] A successful 2015 Department of Defense (DOD) and SBST pilot showed that Permanent Change of Duty Station (PCS, or transferring to a new installation) can be a reset moment, or a good time to provide service members with new information, choices, and a TSP enrollment form.[4]

Methods. In collaboration with DOD and Army G-1, SBST ran two pilots at large Army installations—Fort Bragg, NC, and Fort Lewis, WA—testing active choice interventions during "in-processing," the orientations that occur as service members are newly assigned to a base.[5] At Fort Bragg, service members received and were required to submit a TSP-U-1 Election Form with an added choice between three options: "Yes, I choose to

enroll and save," "No, I choose not to enroll and save," or "I'm already enrolled." At Fort Lewis, service members were asked to raise their hand if they were not enrolled in TSP and wanted to; those who raised their hand were immediately led to computers to enroll online using the myPay system. A cover sheet and video were also provided to service members providing information on the benefits of TSP investing; and asking service members why they chose to enroll (or not). Briefing logistics made random assignment infeasible; for the purposes of estimating impacts of the treatment at Forts Bragg and Lewis, TSP enrollment data were collected on enrollment rates at treatment bases over the year preceding the pilot period and from a comparison set of similar forts: Forts Hood, Campbell, and Benning.

Results. During the five-week period including the pilot at both bases, the enrollment rate was 10.74 percent at Fort Bragg and 8.39 percent at Fort Lewis, compared to a maximum of 1.86 percent at the other three bases. We use a linear probability model to estimate that the pilot led to a 8.32 percentage point increase in the likelihood of a service member enrolling in TSP within four weeks of in-processing ($p < 0.01$, 95% CI [7.13, 9.51]).[6,7] There is also some evidence, as seen in the figure below, that the Fort Bragg intervention—an active choice on a paper form—led to a larger effect size

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[1] For general background information on TSP, see: tsp.gov

[2] The fraction of service members currently not enrolled (56 percent) is calculated based on DOD administrative data. The fraction newly enrolling each month is extrapolated from prior, SBST work, see: Social and Behavioral Sciences Team, *Annual Report* (2015), 30.

[3] Gabriel D. Carroll, James J. Choi, David Laibson, Brigitte C. Madrian, and Andrew Metrick, "Optimal Defaults and Active Decisions," *Quarterly Journal of Economics* 124 (2009): 1639–1674.

[4] See "Servicemember TSP Enrollment," Social and Behavioral Sciences Team, *Annual Report* (2015), 31.

[5] The pilot ran from 03/21/2016 to 04/18/2016 at Ft. Bragg and from 03/14/2016 to 04/8/2016 at Ft. Lewis.

[6] The linear probability model includes dummy variables—fixed effects—for each base, a linear time trend, and a dummy

variable indicating whether or not a service member in-processed during a pilot. The reported effect represents the coefficient estimate on this last variable. We estimate the model with robust clustered standard errors. We also estimated models including other control variables, including a polynomial time trend and the grade (pay) of the service member; the results reported are the most conservative estimate of the treatment effect.

[7] For those who filled out a supplemental information form describing reasons why they did or did not enroll, more than four in five (83 percent) of enrolling service members said they were doing so "to save for the future." For those who did not enroll, only 8 percent said it was because they were not interested in TSP enrollment, with others saying they wanted to do more research (12 percent) or wanted to talk with a spouse (4 percent) or enroll later in their career (8 percent).
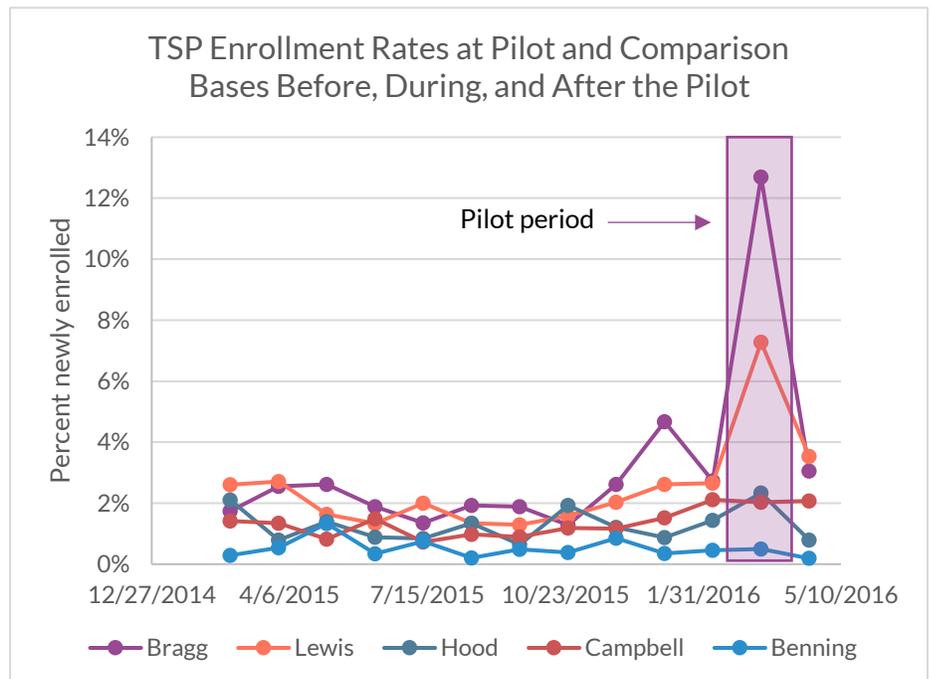
than the computer-based enrollment intervention at Fort Lewis.

If we restrict the data to examine service members likely to have been in the service for four years or less, and thus more likely to be making initial decisions about retirement savings, we estimate that the pilot led to a 9.88 percentage point increase in the likelihood of enrolling within four weeks of inprocessing ($p <$ 0.01, 95% CI [8.95, 10.81]).[8]

Conclusions. While auto-enrollment and auto-escalation savings plans have shown dramatic success at increasing participation in savings plans by new employees, active choice interventions can also be used to increase participation (and perhaps contribution rates among existing participants) by existing employees. These findings can inform policy discussions regarding defined contribution savings participation in the armed forces and beyond.

TSP Enrollment Rates at Pilot and Comparison Bases Before, During, and After the Pilot

Legend: Bragg, Lewis, Hood, Campbell, Benning

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[8] To estimate this model we restrict the data to include service members of ranks E1 to E4 and O1 to O2, who are most likely to have served four years or less.
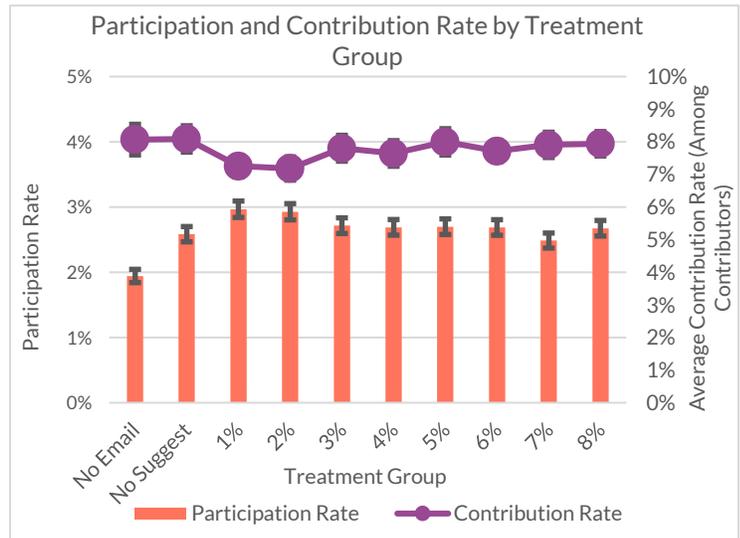
SBST 2016 Project Abstract

Agency Objective. Increase enrollment and contribution rates in Thrift Savings Plans among interested active duty service members using behaviorally designed email communications.

Background. The Federal Government operates a workplace savings program called the Thrift Savings Plan (TSP) for all of its employees.[9] While the Government automatically enrolls its civilian employees in TSP, it does not currently automatically enroll service members, and military enrollment rates average roughly 44 percent. In order to enroll, service members need to log in to a website and select from a suite of potential contribution percentages. A 2015 Department of Defense (DOD) and Social and Behavioral Sciences Team (SBST) study showed that many of the nearly 800,000 unenrolled service members chose to enroll in TSP when actively emailed about a chance to do so.[10]

Methods. The Defense Finance and Accounting Service (DFAS), in collaboration with SBST and academic researchers, tested the impact on TSP enrollment of sending unenrolled service members emails that suggested contribution rates.[11] In addition to a no-email control and a message based on results from tests in 2015,[12] eight different messages added a prompt that suggested a rate of savings between 1 and 8 percent.[13] The 699,674 service members who were not enrolled in TSP as of January 26, 2016 were randomly assigned to these ten groups based on SSN. After DFAS sent out the emails on January 27, 2016, it tracked TSP enrollment through the end of February.

Results. One month after the emails were sent, 18,451 service members had enrolled: 1,362 in the no-email group (1.94 percent), compared with 1,813 who received an email with no suggested contribution rate (2.58 percent) and 15,276

across those sent the eight anchoring emails (2.73 percent). Overall, receiving an email resulted in an increase of 0.77 percentage points ($p < 0.01$, 95% CI [0.66, 0.88]). Emails with suggested contribution rates ranged from a low of 2.49 percent enrollment (for a 7 percent suggestion) to a high of 2.97 percent (for a 1 percent suggestion). Suggesting low contribution rates (1 and 2 percent) led to slightly higher new enrollments, but those suggestions also led to lower average contribution rates among those who contributed. From 3 percent up to 8 percent, increasing the suggested contribution rate did not depress enrollment. For each of the eight suggested contribution rates, there was some evidence suggestive of an anchoring effect—service members were more likely to contribute at exactly the suggested rate than those who were not given a suggested rate.

Participation and Contribution Rate by Treatment Group

Conclusions. There were more than $1 million in new contributions made in February 2016 alone as a result of the emails, demonstrating behaviorally informed email campaigns continue to be effective at prompting service member enrollment in TSP. While an increase in suggested

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[9] For general background information on TSP, see: tsp.gov
[10] Social and Behavioral Sciences Team, *Annual Report* (2015), 30.
[11] Katherine L. Milkman collaborated with SBST on this project.

[12] Social and Behavioral Sciences Team, *Annual Report* (2015), 30.
[13] James J. Choi, Emily Haisley, Jennifer Kurkoski, and Cade Massey, "Small Cues Change Savings Choices," (NBER Working Paper No. 17843, 2012).

contribution rates led to slightly lower new enrollments, the average contribution rate increased with higher suggested contributions, which resulted in no substantial net difference in actual savings between groups. As military, civilian, and private sector employees consider modifications to compensation and retirement schemes, the typical default—3 percent suggested contributions—may not be optimal in terms of encouraging new enrollments or substantial retirement contributions.

Military Retiree myPay Reactivation

Clear action steps and behaviorally informed messages increase access to an online financial management platform for military retirees

Agency Objective. Increase military retirees' reactivation of their online military retirement finance management platform accounts to allow retirees faster access to their tax documents and to offset operational burden for the agency during tax season.

Background. One of the purposes of the online platform myPay is to help military retirees manage their finances. It allows electronic download of tax documents, such as a Retirement Account Summary (RAS) and the IRS-1099 form. While myPay accounts are automatically created for all military retirees, many have never used their account, or have let their accounts deactivate by not logging in for 180 consecutive days. At the time of this pilot, about 55 percent of the retiree population had inactive myPay accounts (1.4 out of 2.5 million retirees). This poses a problem during tax season, when the number of retirees contacting the Defense Finance and Accounting Service (DFAS) surges as retirees try to either regain access to myPay or request copies of their tax documents. For example, in the fourth quarter of 2014 DFAS received a monthly average of 12,393 calls regarding accessing myPay accounts, compared to 29,046 during the first quarter (tax season) of 2015. The increased call volume during tax season places operational burden on DFAS and may result in slower services for military retirees.

Methods. DFAS and SBST designed nine different emails to encourage reactivation of myPay accounts prior to the beginning of tax season. A baseline email template was created using existing language about myPay from DFAS newsletters and letters to retirees, with added clear action steps on how to reactivate a myPay account. Eight additional email variants were built upon the baseline template using behavioral insights: an email with a DFAS team signature versus an email with a DFAS director's signature, one email highlighting the resources that could be given to current service members by cutting DFAS' mailing costs, one email appealing to the security of using myPay, one email that provided social proof information,[14] and three emails with different framings of how myPay can simplify retrieval of tax documents.[15] A control group did not receive any email initially, but received an email after the end of the pilot.[16,17]

Emails were sent in four separate waves between September 8 and November 5, 2015, two to three treatments at a time.[18]

Results. Between September 8 and November 10, 2015, 5.5 percent of retirees who did not receive an email reactivated their myPay accounts. In comparison, 10.2 percent of retirees who received an email had reactivated their myPay accounts—a difference of 4.7 percentage points from the control group ($p < 0.01$, 95% CI [4.50, 4.98]). This translates to about 800–1,000 additional customer service calls during the 3.5 months of pilot.

The most effective email appealed to the security of using myPay to retrieve tax documents, compared with using traditional mail.[19] This email increased reactivation by 5.45 percentage points compared to no email over the same time period ($p < 0.01$, 95% CI [5.13, 5.77]). The other emails also produced significant, positive increases in

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[14] Hunt Allcott, "Social Norms and Energy Conservation," *Journal of Public Economics* 95 (2011): 1082–1095

[15] A generic statement about access to "tax documents," a statement instead referring to specific tax documents—the "1099 and RAS"—and a statement asking individuals to think about their experience last tax season.

[16] After the pilot, two emails were chosen from the original nine, and sent to the control group.

[17] Including the control group, 261,754 retirees participated in the pilot.

[18] Emails were mostly sent on Tuesdays, with the exception of the final two emails, which went out on Wednesday November 4th and Thursday November 5th.

[19] "Don't risk getting your W-2 and other tax documents lost in the mail or opened by someone else."

reactivation relative to no email that ranged between 2.47[20] and 5.00[21] percentage points.

Conclusions. Clear action steps and behaviorally informed messaging can be a significant help for military retirees reactivating myPay accounts. The best performing language will be utilized in DFAS' future communications to further improve their service to military retirees.

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[20] For the email emphasizing past experiences last tax season

[21] For the email emphasizing benefits to current service members.

SBST 2016 Project Abstract

Agency Objective. Increase household response to requests by Local Education Agencies (LEAs) to provide materials supporting applications for benefits delivered under the National School Lunch Program (NSLP).

Background. NSLP is a federally assisted meal program operating in over 100,000 public and non-profit private schools and residential child care institutions. It provided nutritionally balanced, low-cost or free lunches to more than 30 million children each school day.[22] USDA's Food and Nutrition Service (FNS) administers the NSLP at the Federal level, while state and local authorities deliver the program to children in schools. As part of the NSLP program, LEAs are required to confirm the eligibility of some household recipients for free and reduced-price meals.[23] Prior studies have demonstrated that some of the households selected for verification do not respond to requests to provide proof of eligibility not because they lack these materials, but because of misunderstanding or confusing procedures.[24]

Methods. In order to make the request for verification clearer and easier to understand, the research team designed a new request letter that used simpler language, pictures meant to cue an association with the NSLP, a new visual summary of materials that the household was required to submit, and a personalized message from the LEA. In addition, the letter emphasized that materials could be submitted in multiple formats, including by smart phone (households could take pictures of required documents and email them to the LEA using their smart phone). Finally, rather than

conduct the verification procedure in October—two months or more from the beginning of school when benefits begin to be delivered for most families—FNS considered conducting verification on a rolling basis, requesting verification materials from households as the household's application is approved for benefits. Ultimately it was impossible to implement each of the planned changes at once, since the verification procedure is independently carried about by each of the nearly 20,000 LEAs across the country. Revised letters were used in 74 LEAs across the country, balanced by 82 LEAs that were randomly paired with the pilot LEAs but were not asked to revise their letters. Some, but not all, of treatment LEAs were able to implement smartphone submission. None of the treatment LEAs were able to implement changes in the timing of their verification procedures during year one of the pilot.[25] We report here on what we term a "feasibility pilot" meant both to generate preliminary data on the impact of revised letters, as well as to learn about procedural variation across LEAs.

Results. Using a difference-in-difference estimator, we estimate that the new letters increased response by 2.1 percent ($p = 0.66$, 95% CI [-7.10, 11.28]), though this is imprecisely estimated.

Conclusions. Initial work in this area suggests that improving the design and clarity of communications to beneficiaries may be helpful in increasing response to verification requests, but also suggest that more substantial changes to the verification procedure will be necessary to

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[22] http://www.fns.usda.gov/sites/default/files/NSLPFact Sheet.pdf

[23] LEAs are required by statute 42 U.S.C. 1758(b)(3)(D) to verify a sample of household applications approved for free or reduced price benefits each school year. See, for example, the 2015 Edition of the Eligibility Manual for School Meals, which was operative during the period discussed here: http://www.fns.usda.gov/2015-edition-eligibility-manual-school-meals

[24] A 2004 USDA case study found that many of the households that failed to respond to LEA verification requests

were, in fact, income eligible for the benefits that were awarded to them at the time their applications were processed. See Report No. CN-04-AV3 at: http://www.fns.usda.gov/sites/default/files/NSLPcasestudy.pdf

[25] The pilot described here continues in school year 2016/2017, during which several LEAs are implementing the full suite of changes described, including changes in the timing of verification.

increase response rates appreciably. LEAs involved in the first-year pilot suggested that use of smartphone and email submission was helpful, and reported that beneficiaries took advantage of the method. A test of the full suite of modifications, including changes in the timing of verification activity, is currently underway.

Farm Service County Committee Elections
Improving voter participation in local USDA elections

Agency Objective. Increase voter participation in non-partisan County Committee Elections.

Background. The Department of Agriculture's (USDA's) Farm Service Agency (FSA) operates programs—such as loans, disaster payments, and commodity and conservation programs—that impact the lives of farmers and ranchers, their income, and the economy. FSA interacts directly with farmers and ranchers through a network of local field offices, where farmers can inquire about or apply for programs. In addition to being a point of contact between FSA and farmers, important policy decisions are made at the local level, including setting payment rates. Each field office is administered by a County Executive Director who is responsible for the local implementation of FSA programs. The County Executive Director is in turn overseen by a County Committee (COC) whose members are elected by all farmers eligible to participate in FSA programs.

County Committees were first authorized by the Soil Conservation and Domestic Allotment Act of 1935. Over time, participation in COC elections has declined, endangering the model of local representation that the Committees represent. In an effort to increase voter turnout, FSA partnered with ERS and the Social and Behavioral Sciences Team (SBST) to test changes to COC election ballots and outreach material.

Methods. The experiment was conducted during the 2015 COC elections, which took place by mail over an approximately one-month period in late 2015. FSA mailed a ballot to each eligible voter in early November; the deadline for voters to return a valid ballot was approximately one month later, in early December.

Two changes to voter outreach were tested in the experiment: (i) candidate information printed on the outside of ballots and (ii) postcards with candidate information sent to voters (*n* = 1,399,307).

First, because voters receive ballots by mail, one barrier to submitting a valid ballot may simply be the action of opening the ballot and evaluating candidate choices. We printed the names of candidates—which are otherwise included only on the inside of sealed ballots—on the outside of some ballots so that they would be readily apparent to eligible voters regardless of whether or not they opened the ballot.

Second, because voters may simply forget to vote by the deadline, even if they intend to, we tested the effect of informational postcards bearing the candidates' names and information about the election on voter turnout. A total of two postcards were sent to all eligible voters who were assigned to the relevant treatment condition, one designed to arrive approximately one week before the ballot arrived in the mail, and one designed to arrive approximately one week before the ballot submission deadline. The pre-ballot postcard included: (i) the names of all candidates running for election; (ii) a personalized message encouraging eligible voters to help make sure farmers in their county were represented; (iii) a reminder that the term of the Committee Member would be three years in length, implying that the next chance to vote for COC representation would be three years in the future; and (iv) a picture of the ballot that would be arriving in the mail soon. The picture provided a visual cue that the eligible voter would associate with the postcard and the election when they received the ballot in the mail. The post-ballot postcard included all the same information that the pre-ballot postcard did, and additionally provided text reminding the eligible voter that the deadline was approaching. Voters were also informed that if the ballot had been lost (or failed to arrive in the mail), the eligible voter could obtain a new ballot by visiting their local field office.
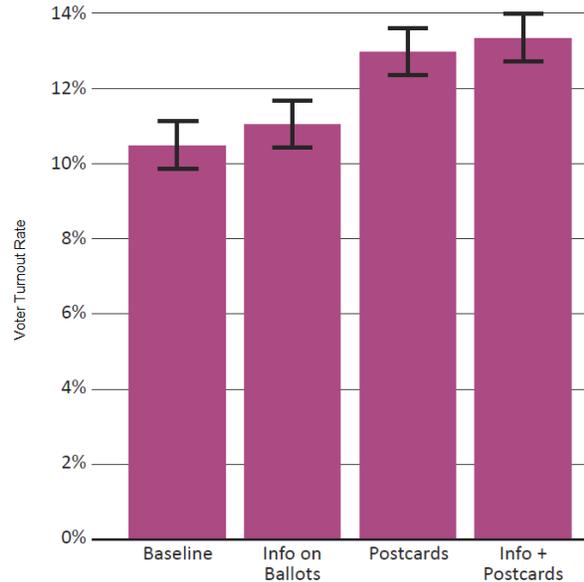
Results. The voter participation rate of households that received neither an enhanced ballot nor a postcard was 9.3 percent. The treatment effect of including information on the

ballot and sending postcards is estimated to be 2.9 percent ($p < 0.01$, 95% CI [2.7, 3.0]), or a relative effect of nearly 24 percent. To put the estimated treatment effect into perspective, with a treatment effect of 2.9 percent and a postcard cost of approximately $0.05 per unit, this translates to one extra ballot cast for every $1.72 spent. FSA can use this information to encourage participation in future elections, and can build on the results here to create new low-cost outreach strategies.

Conclusions. Providing information to farmers, as well as reminders, can increase participation in the democratic process to elect local representation.

SBST 2016 Project Abstract

Agency Objective. Increase enrollment in the Small Business Administration (SBA) Learning Center by reducing frictions associated with enrollment forms.

Background. Small business owners have limited time to research relevant trainings for the skills they seek to build and tactics they hope to employ, enroll in a course, and ultimately attend critical trainings on running and growing their business. In response to the need for relevant training, SBA created the Learning Center,[26] which now hosts 58 courses on a variety of topics including "Contracting Opportunities for Veterans", "Financing Options for Small Businesses", and "How to Write a Business Plan."

Once a user selects a course from the catalog, reads the course description, and clicks "Begin Course," they view a pop-up registration form. This registration form begins by asking for an individual's name and address and includes six informational fields to be completed and seven multiple-choice questions.[27] While not mandatory, preliminary research suggests that the burden of completing this form and providing personally identifying information led to 43 percent of small business owners exiting from the course without starting the course.

In addition to reducing barriers to access, SBA would also like to learn more about the 20,000 small business owners each month seeking learning resources through the Learning Center. Characteristics such as the types of businesses site visitors run (nascent, start-up, or in-business), the owners themselves (women-owned, minority-owned, veteran-owned), and the locations of these businesses are important to enable effective course design and inform priorities for expanding available content. A business owned by an active member of the military may qualify for particular services, for example.[28]

Methods. SBA and SBST created two updated versions of the registration form that both decreased the free-form fields to just one, decreased the number of multiple choice questions to six (while still collecting the same information), and reordered the form to begin with simple questions about the small business rather than name, address, and ethnicity of the individual filling out the form.

SBA piloted the forms during three months beginning March 25, 2016 and recorded the proportion of users who continued to the course and the proportion of users who left the website without completing the form.

Results. During the three months that the new forms were piloted, 64.1 percent of users continued the course after registering, compared with a 57.6 percent in the three months before the changes were implemented, an increase of 6.5 percentage points ($p < 0.01$, 95% CI [5.81, 6.81]).[29]

The second updated version of the form also appeared to increase the amount of information voluntarily provided during registration. In the two months before the change, 77.8 percent of visitors provided some or all of the information requested, compared to 87.4 percent of those

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[26] https://www.sba.gov/tools/sba-learning-center/search/training

[27] https://www.whitehouse.gov/sites/default/files/omb/inforeg/memos/2015/behavioral-science-insights-and-federal-forms.pdf

[28] Individual interest in sharing information is currently a topic being studied by a team at the General Services Administration—part of an initiative called the "Federal Front Door." Qualitative research has found that "most people have

no problem providing information if doing so will benefit them" and they understand how it will be used. https://labs.usa.gov/files/FFD_ResearchReport.pdf, pg. 22.

[29] This study was not randomized. We compare the performance of the new form to the average of the preceding calendar year in the graphic below (to display overall trends and seasonal differences). Significance tests and confidence intervals are reported by convention, but we note here are valid only under the assumption of a randomized experiment.
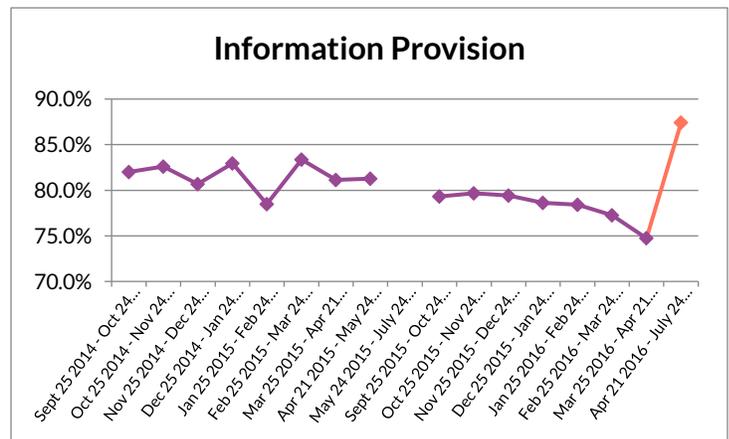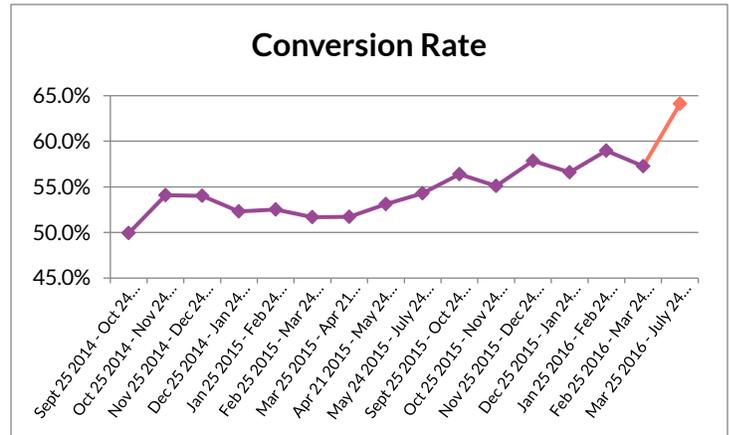
presented with the new form, a 9.6 percentage point increase ($p < 0.01$, 95% CI [9.14, 10.18]).[30, 31]

Conclusions. Government forms can be burdensome. Further research can examine the most effective ways to reduce redundancy, improve form layout, and word questions such that information is provided more accurately and the user can complete it more quickly with less effort. This form redesign offers evidence that when agencies work to improve the layout of their forms, it can reduce aversion to a form—in this case, aversion that was acting as a barrier to an important resource for small business owners.

These results also suggest that individuals may be willing to providing information under certain conditions. Asking a form-filler to complete one simple question may turn their attention to reading other optional questions, including one that informs them how information will be used to their benefit.

Conversion Rate

Information Provision

■ Old Form   ■ New Form

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[30] Compared to a similar two-month period in 2015, the percent continuing onto the course was 6.2 percentage points higher ($p < 0.01$, 95% CI [5.73, 6.91]). The figure titled "Information Provision" displays all available data, and includes a small gap in May–June 2015 when data are unavailable.

[31] Data was not available for May 24, 2015–July 24, 2015.

SBST 2016 Project Abstract

Agency Objective. Determine whether mailers could be used to increase completion of the Free Application for Federal Student Aid (FAFSA) among youth and full-time students living in subsidized housing.

Background. Research shows that the positive returns to college are high, yet low-income students attend college at rates lower than their more affluent peers.[32] Completing the Free Application for Federal Student Aid (FAFSA) is the first step to receiving federal financial aid, but the application process can create barriers to access for some students; potential borrowers who qualify for financial aid may not receive it because they do not complete the FAFSA.[33,34]

Methods. The Department of Housing and Urban Development (HUD), Department of Education (ED), and SBST partnered to test several mail interventions to increase the proportion of HUD-assisted youth who complete the FAFSA. HUD randomly assigned youth and full-time students ages 17 to 20 in households using Housing Choice Vouchers to be sent one of 9 mailings or no mailing. The nine variations tested both the messenger and format of the mailing. The messenger was either: Federal Student Aid (FSA) or the First Lady, with one of the variants including a personal message from the First Lady. The three formats included a standard letter, a letter with a copy of the paper FAFSA included, and a postcard. Variations targeted both direct behavioral

impediments—including the paper FAFSA with the letter allowed for immediate completion for those without internet access—and leveraged insights from the behavioral literature.[35] The personal story from First Lady Michelle Obama was intended to motivate educational aspiration and reduce the anxiety low-income students may feel when thinking about college,[36] and the postcard presented information without requiring the recipient to open an envelope.[37] Approximately 5,000 individuals were sent each of the nine variations; the control group includes approximately 160,000 individuals (*n* = 203,191).

Results. All youth and full time students 17 to 20 as of January 2016 were included in the trial, and random assignment was performed without knowing which individuals already submitted a FAFSA for the 2016–2017 academic year. The mailings were sent on March 24, 2016 so we only consider individuals who had not submitted a FAFSA by the mailing date in the results below.[38] There are no significant effects of sending mailings on the rate of FAFSA completions. Twenty-two percent of individuals who were sent some kind of mailing completed the FAFSA, which was 0.30 percentage point higher than the rate of the control group (*p*=0.24, 95% CI [-0.20, 0.80]). The most effective sender was the First Lady using her personal story, with a 22.4 percent FAFSA completion rate, 0.65 percentage point higher than the control group (*p*=0.11, 95% CI [-0.16, 1.46]). The letter including the paper FAFSA was

[32] David Deming and Susan Dynarski, "Into College, Out of Poverty? Policies to Increase the Postsecondary Attainment of the Poor," (NBER Working Paper No. 15387, 2009).

[33] Eric P. Bettinger, Bridget Terry Long, Philip Oreopoulos, and Lisa Sanbonmatsu, "The Role of Application Assistance and Information in College Decisions: Results from the H&R Block FAFSA Experiment," *Quarterly Journal of Economics* 127 (2012): 1205–1242

[34] Susan Dynarski, and Judith E. Scott-Clayton, "Complexity and Targeting in Federal Student Aid: A Quantitative Analysis," (NBER Working Paper No. 13801, 2008).

[35] Additionally, it is possible that having the paper FAFSA available to use as a worksheet will make the process less cumbersome even for those who ultimately complete the application online.

[36] Claude M. Steele and Joshua Aronson, "Stereotype Threat and the Intellectual Test Performance of African Americans," *Journal of Personality and Social Psychology* 69 (1995): 797–811; Clinton Amos, Gary Holmes, and David Strutton, "Exploring the Relationship between Celebrity Endorser Effects and Advertising Effectiveness," *International Journal of Advertising* 27 (2008): 209–234.

[37] Niklas Karlsson, George Loewenstein, and Duane Seppi, "The Ostrich Effect: Selective Attention to Information," *Journal of Risk and Uncertainty* 38 (2009), 95–115.

[38] Completion data are current through August 10, 2016. Mailings were sent over the course of one week. Postcards were mailed March 24, 2016, letters were mailed March 28, 2016, and letters including the paper FAFSA were mailed March 31, 2016. Results including data from January 1 to March 24 are qualitatively similar.

https://sbst.gov

the most effective format, also with a 22.4 percent completion rate (0.69, *p*=0.10, 95% CI [-0.12, 1.50]).

Conclusions. The effects of the mailings were not large enough to say with confidence that they increased FAFSA completion rates but there is suggestive evidence that some messengers and formats were more effective than others. The most effective messenger appeared to be the First Lady using her personal story, but the least effective was the First Lady using FSA's language.

This could suggest that the messenger was more effective when the message seems authentic. The most effective format was including the paper FAFSA. From a behavioral perspective, this format likely was effective because it made it easier for recipients to follow through on intentions that they already held.

Group	Difference (p.p.)	p-value	95% CI
Any Mailing	**0.30**	**0.2351**	**[-0.20, 0.80]**
FSA	0.50	0.2185	[-0.30, 1.30]
First Lady with FSA message	-0.24	0.5513	[-1.04, 0.56]
First Lady with personal message	0.65	0.1110	[-0.15, 1.45]
Letter	0.34	0.4005	[-0.46, 1.14]
Paper FAFSA	0.69	0.0924	[-0.11, 1.49]
Postcard	-0.12	0.7723	[-0.91, 0.68]

Notes: Each row reports the estimated difference between the FAFSA completion rate for the indicated group and that of the control group in percentage points, the associated *p*=value and 95% confidence interval. The control group FAFSA completion rate was 21.7 percent.

SBST 2016 Project Abstract

Agency Objective. Increase enrollment in Revised Pay As You Earn (REPAYE) and Income-Driven Repayment (IDR) plans among those who would benefit.

Background. Student loan borrowers have over $1.26 trillion dollars in outstanding Federal student loan debt.[39] Income-driven repayment plans can help Americans manage this debt by limiting their monthly payments to a percentage of their discretionary income and providing for loan forgiveness. Despite these benefits, fewer than 24 percent of student loan borrowers are in IDR repayment plans.[40] REPAYE plan was released by the Department of Education in 2015 to simplify and expand IDR eligibility. The plan caps monthly payments at 10 percent of a household's discretionary income, limits interest capitalization, and enables loan forgiveness after 20 or 25 years of qualifying payments for undergraduate or graduate borrowers, respectively. Despite these benefits, those borrowers who could benefit may not sign up for REPAYE or another IDR plan if they do not think they are eligible, are not aware of the benefits, need a prompt or reminder, or are avoiding facing their financial situation.[41]

Methods. To assist individuals in overcoming barriers to application, the Department of Education's Office of Federal Student Aid (FSA) tested behaviorally informed emails sent to a number of different borrower groups, each described below. A total of 460,000 borrowers were randomly allocated to receive either one of a series of emails or no email (control group).

Two generic emails were sent to all types of borrowers and used as baseline emails; the first contained information about benefits and five action steps (E1); the second was a shorter email starting with a prompted action and one step to leverage primacy and simplicity of action (E2). A series of targeted emails was sent to borrowers who were distinguished by certain characteristics.

One group of borrowers interested in IDR included previous IDR applicants and those who indicated a preference for IDR during their exit loan counseling. Borrowers in this group were either sent an email that began with action steps and highlighted that the borrower was "guaranteed to qualify" (E3).

Second, borrowers who were in forbearance or economic deferment were sent a targeted email containing loss aversion language ("Avoid making monthly student loan payments of more than 10% of your income") and using an example of the income that would result in a monthly payment of $0 (E4).

Third, borrowers who were 31-240 days delinquent were sent a targeted email with a prompted choice to sign up for IDR or do nothing and potentially suffer the negative consequences of default (E5).

Fourth, borrowers who had Federal Family Education Loans (FFEL) and needed to consolidate their loans before being eligible for REPAYE were sent two emails.[42] One email (E6) presented the benefits of REPAYE first and the eight action steps to consolidate and sign up for IDR afterwards. The second email (E7) presented the action steps first and explained the benefits second.

Results. All emails sent to borrowers who had shown interest in IDR or were in financial hardship resulted in significantly more submitted IDR applications compared to the control group. E2, which prompted interested borrowers to submit

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[39] Federal Student Aid, *Data Center*; data accessed 2016 at https://studentaid.ed.gov/sa/about/data-center/student/portfolio. See "Federal Student Aid Portfolio Summary."
[40] Ibid. See "Direct Loan Portfolio by Repayment Plan." Twenty four percent of direct loan borrowers who are in repayment, deferment, or forbearance are enrolled in an IDR plan as of Q3 2016.
[41] Niklas Karlsson, George Loewenstein, and Duane Seppi. "The ostrich effect: Selective attention to information." *Journal of Risk and Uncertainty* 38, no. 2 (2009): 95-115.
[42] This group of borrowers were not sent the two generic baseline emails.

an application with minimal discussion of benefits, had the highest IDR submission rate (8.9 percent) among IDR Applicant borrowers, but the difference was statistically insignificant compared to the baseline email (difference=0.31 p.p., p=0.70, 95% CI [-0.42, 1.03]). Among IDR Preference borrowers, the baseline email had the highest submission rate (9.0 percent), although there were no significant differences with the second email (difference=0.13 p.p., p=0.97, 95% CI [-0.61, 0.86]).

Among borrowers who were in financial hardship, E4 had the highest submission rate. The increase was not statistically distinguishable from the baseline emails for those in forbearance, who had a 5.6 percent application rate (difference=0.36 p.p., p=0.39, 95% CI [-0.22, 0.94]), but was significantly higher than the baseline email among borrowers in deferment, increasing submissions by 0.96 percentage points from a base rate of 6.8 percent (p<0.01, 95% CI [0.29, 1.63]).

Among delinquent borrowers, E5 was the only email to significantly increase IDR submission rates compared to the no-email control group's rate of 3.45 percent (difference=0.52 p.p., p= 0.03, 95% CI [0.03, 1.01]).

Among FFEL borrowers, neither E6 nor E7 significantly changed applications submission rates compared to the control group. The email presenting the benefits of REPAYE first (E6) increased applications from 6.1 percent to 6.6 percent (p=0.14, 95% CI [-.11, 1.03]), while E7 increased applications to 6.5 percent (p=0.25, 95% CI [-0.18, .96]).

Conclusions. Borrowers who had previously shown interest in IDR were more likely to submit an IDR application if sent an email prompting application. Borrowers who had taken action to claim a forbearance or deferment of their loan payment due to economic hardship were more likely to submit an IDR application after receiving a targeted email using loss aversion along with a specific example of how they can pay $0 per month. Borrowers who were in delinquency and had not taken any action were more likely to submit an IDR application after receiving a targeted email containing a prompted choice. FFEL borrowers were not likely to respond to an email campaign encouraging them to proactively choose a new repayment plan.

SBST 2016 Project Abstract

Agency Objective. Increase enrollment in Revised Pay As You Earn (REPAYE) and Income-Driven Repayment (IDR) plans among those who would benefit.

Background. Student loan borrowers have over $1.26 trillion dollars in outstanding Federal student loan debt.[43] Income-driven repayment plans can help Americans manage this debt by limiting their monthly payments to a percentage of their discretionary income and providing for loan forgiveness. Despite these benefits, fewer than 15 percent of Federal student loan borrowers are in IDR repayment plans.[44] REPAYE plan was released by the Department of Education in 2015 to simplify and expand IDR eligibility. The plan caps monthly payments at 10 percent of a household's discretionary income, limits interest capitalization, and enables loan forgiveness after 20 or 25 years of qualifying payments for undergraduate or graduate borrowers, respectively. Despite these benefits, those borrowers who could benefit may not sign up for REPAYE or another IDR plan if they do not think they are eligible, are not aware of the benefits, need a prompt or reminder, or are avoiding facing their financial situation.[45]

Methods. Scaling the most successful messages from the IDR Targeted Messages pilot, the Department of Education's Office of Federal Student Aid (FSA) sent behaviorally informed emails to a number of borrower groups. A total of 3,036,691 borrowers were randomly allocated to receive either the most effective message from the Targeted Messages pilot, or no email (control group).

Borrowers who had shown interest in IDR plans either by previously submitting an IDR application

or by indicating a preference for IDR during their exit loan counseling were sent a short email starting with a prompted action and one step to leverage primacy and simplicity of action.

Borrowers who were in forbearance or economic deferment were sent an email containing loss aversion language ("Avoid making monthly student loan payments of more than 10% of your income") and using an example of the income that would result in a monthly payment of $0.

Borrowers who were 31-227 days delinquent were sent an email with a prompted choice to sign up for IDR or do nothing and potentially suffer the negative consequences of default.

Borrowers who had Federal Family Education Loans (FFEL), and needed to consolidate loans before being eligible for REPAYE, were sent an email that presented the benefits of REPAYE first and the eight action steps to consolidate and sign up for IDR second.

Results. The short email prompting action increased IDR submissions among borrowers who had previously submitted an IDR application by 0.28 percentage point (p = 0.02, 95% CI [0.04, 0.52]) compared to a 5.93 percent application rate in the control group. The same email increased IDR submissions among borrowers who indicated a preference for IDR during exit loan counseling by 0.63 percentage point (p < 0.01, 95% CI [0.37, 0.88]) compared to a 6.81 percent application rate in the control group.[46]

The email containing loss aversion language increased IDR submissions among borrowers in forbearance by 0.72 percentage point (p < 0.01, 95% CI [0.53, 0.90]) compared to a 3.55 percent application rate in the control group. The same

[43] Federal Student Aid, *Data Center*; data accessed September 2016 at https://studentaid.ed.gov/sa/about/data-center/student/portfolio.
[44] Ibid.

[45] Niklas Karlsson, George Loewenstein, and Duane Seppi. "The ostrich effect: Selective attention to information." *Journal of Risk and uncertainty* 38, no. 2 (2009): 95-115.
[46] All regressions reported here included controls indicating if the borrower's loan was serviced by PHEAA, the servicer responsible for borrowers in the Public Service Loan Forgiveness program.
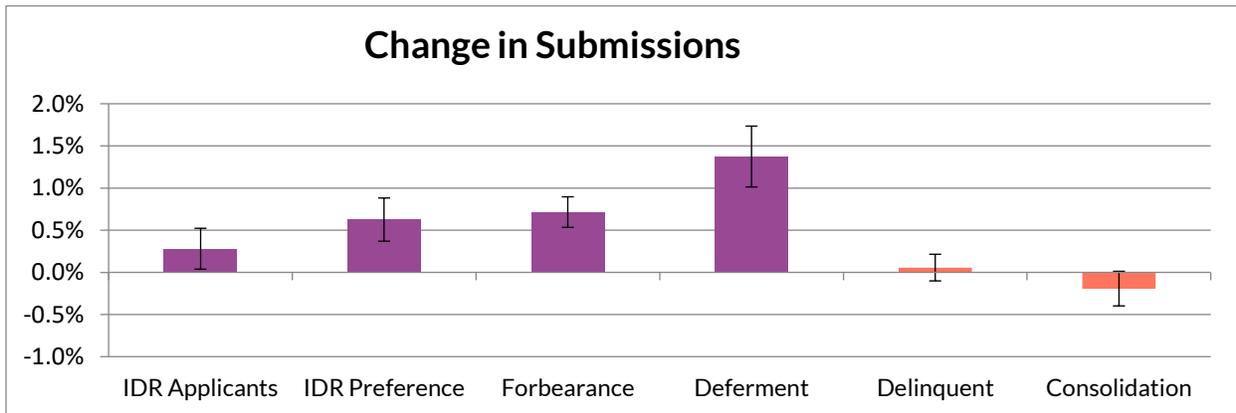
https://sbst.gov

email increased IDR submissions among borrowers in deferment by 1.37 percentage points ($p < 0.01$, 95% CI [1.01, 1.74]) compared to a 4.82 percent application rate in the control group.

The email containing a prompted choice increased IDR submissions among borrowers in delinquency by 0.06 percentage point ($p = 0.48$, 95% CI [-0.10, .21]) compared to a 2.96 percent application rate in the control group.

The email containing an explanation of benefits and action steps decreased IDR submissions

among FFEL borrowers by 0.19 percentage point ($p = 0.07$, 95% CI [-0.01, 0.40]) compared to a 5.18 percent application rate in the control group.

Conclusions. On average, sending an email increased submissions by 0.35 percentage point over the control submission rate of 4.74 percent ($p < 0.01$, 95% CI [0.26, 0.44]), controlling for borrower group. The campaign resulted in over 6,000 more borrowers signing up for IDR, shifting approximately $300 million of Federal student loans into income-driven repayment plans.

Notes: The percentage point change in IDR application submission rates compared to no email 119 days after the first emails were sent.

SBST 2016 Project Abstract

Agency Objective. Increase the number of student loan borrowers completing annual Income-Drive Repayment (IDR) recertification.

Background. Federal Student Aid (FSA) administers loans and repayment plans for higher education. Student borrowers who enroll in IDR plans are required to complete an annual recertification process to update their income and family size. More than half of borrowers fail to recertify their IDR plan each year.[47] Those who fail to recertify are placed into the 10 year standard repayment plan which typically requires higher monthly payments than what borrowers were paying under the IDR plan.
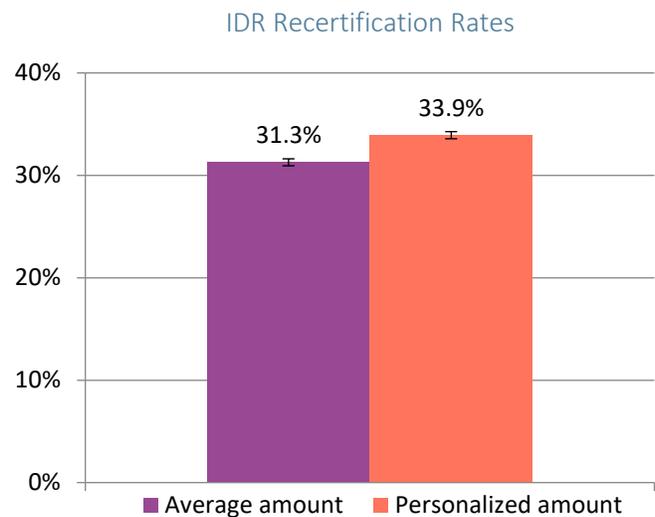
Methods. Between June and October 2015, FSA conducted a series of randomized control trials, sending emails to three separate cohorts of borrowers nearing their IDR recertification dates who would see an increased monthly payment if they did not recertify their income.

Borrowers in Cohort 1 (n=142,505) were randomly assigned to be sent either an email with their actual payment increase or an email stating the average payment increase for failing to recertify. Borrowers in Cohort 2 (n=104,110), were randomly assigned to be sent an initial email and three additional emails either spaced 31 days apart or delivered on consecutive days (the day before, day of, and day after the hard deadline for filing). Borrowers in Cohort 3 (n=46,542) were randomly assigned to be sent emails either with the signature of Program Manager of Direct Loan Servicing, Cindy Battle, or no signature. Within each signature group in Cohort 3, FSA randomly included or excluded the borrower's re-certification date in the body of the email.

Results. In Cohort 1, the message including the borrower's actual monthly payment increase resulted in a higher recertification rate (33.9 percent) than the average monthly payment

increase (difference=2.64 p.p., $p < 0.01$, 95% CI [2.15, 3.13]). In Cohort 2, recertification rates were indistinguishable between the group sent evenly spaced reminders (64.1 percent) and those sent reminders on consecutive days (64.3 percent; difference=0.19 p.p., p=0.53, 95% CI [-0.40, 0.77]). In Cohort 3, including Cindy Battle's signature had no effect on recertification rates. Recertification dates for those sent emails with the recertification date recertified at a marginally higher rate (64.6 percent) than those not sent the date in the email (63.8 percent; difference=0.84 p.p., p=0.06, 95% CI [-0.03, 1.71]).

Conclusions. Including borrowers' actual payment increase was most effective at getting borrowers to recertify for IDR plans. The weakly positive effect of including the borrower's recertification date suggests it may be valuable to consider in future testing. The timing of reminder emails and the inclusion of one official's signature were not effective.

IDR Recertification Rates

Notes: Percentage of individuals recertifying their IDR plan in June 2015. Error bars display 95 percent confidence intervals. n = 142,505.

[47] Katy Hopkins and Karen McCarthy, "ED Unveils New Pilot Programs on Recertification Notifications for Certain Borrowers in Income-Driven Repayment Plans," National Association of Student Financial Aid Administrators (2015).

Defaulted Student Loan Borrowers
Prompting borrowers who recently entered default to take action on their loans, avoiding additional penalties

Agency Objective. Help student loan borrowers in default begin a loan rehabilitation plan.

Background. Each month, roughly 125,000 Federal student loan borrowers who have not made a payment in 360 days enter into default. These loans are transferred from the original loan servicer to the U.S. Department of Education's (ED) Default Resolution Group. If a borrowers fail to act in the next 60 days, their loans are transferred to a private collections agency, and they face serious penalties including a collections fee equal to 25 percent of the principal and interest on their loan(s), damage to their credit, wage garnishment, ineligibility for future federal student aid, and forfeiture of IRS tax refunds. To avoid these penalties, ED offers a loan rehabilitation agreement that allows them to exit default if they make 9 out of 10 payments based on their income (the payment can be as low as $5).

Methods. From April through July 2015, ED conducted an iterative randomized control trial, sending emails to three separate cohorts of borrowers in default, prompting them to contact the ED call center to enter a rehabilitation agreement. In Cohort 1, ED randomly assigned approximately 24,000 borrowers to be sent an email with one of 4 subject lines. The subject line with the highest open rate was used to randomly send an additional 44,000 an email that either emphasized positive collaboration with ED or the negative consequences of default.
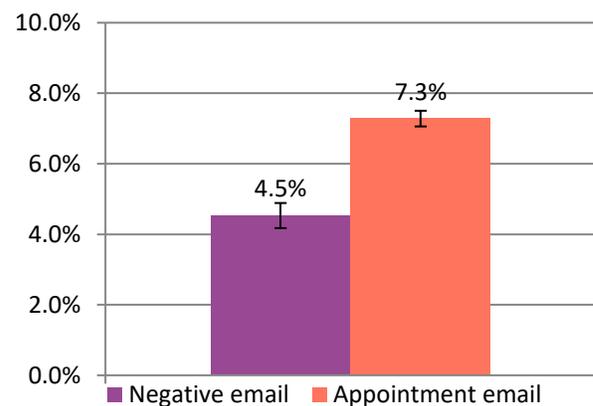
An additional 22,000 borrowers were selected for a control group. In Cohort 2, roughly 76,000 borrowers were randomly assigned to be sent either the "winning" email from Cohort 1 or one of three emails that outlined the steps for getting out of default. The emails varied the number of steps to be taken and emphasized either positive collaboration or negative consequences.

In Cohort 3, ED randomly assigned roughly 80,000 borrowers to be sent either the "winning" email from Cohort 2 or an email that contained a suggested "appointment" slot for a specific low-volume time at the ED call center.

Results. In Cohort 1, the subject line simply stating "Your Student Loan is in Default" resulted in the highest open rate (19.4 percent) and the email negatively-framed email generated a higher call-in rate within three weeks (4.86 percent) than the positively-framed email (difference=1.41 p.p., $p <$ 0.01, 95% CI [1.04%, 1.79%]) and the control group (difference=2.86 p.p., $p <$ 0.01, 95% CI [2.52% , 3.20%]). In Cohort 2, call rates for the emails emphasizing negative consequences were statistically indistinguishable from one another, but all such emails were more effective than the email emphasizing collaboration. In Cohort 3 the subject line "We've Scheduled Your Appointment" resulted in a highest open rate (24.9 percent) than the previous subject line, and including the appointment led to a higher call-in rate within three weeks (7.28 percent) than the email without the appointment (difference=2.75 p.p., $p <$ 0.01, 95% CI [2.27%, 3.23%]).

Defaulted Borrower Call-In Rates in July 2015

Notes: Percentage of defaulted borrowers calling in regarding their loan in July 2015. Error bars display 95 percent confidence intervals. n = 65,403.

Conclusions. Prompting delinquent borrowers with a specific moment of action in the form of an appointment, increases the rate at which they take an initial step to rehabilitate their student loans. Emphasizing negative consequences of default is more effective than describing default more generally.

Public Service Loan Forgiveness Pilot
Encouraging student borrowers to verify public service employment

Agency Objective. Increase the number of borrowers who submit Employer Certification Forms (ECFs), which keep individuals with student loans on track to receive loan forgiveness after ten years of qualifying payments.

Background. The Public Service Loan Forgiveness Program (PSLF) forgives borrowers the remainder of their outstanding loan balance after making ten years of qualifying payments while working for a qualifying employer. The first borrowers will be eligible to receive forgiveness starting in October 2017.[48] To track progress towards loan forgiveness, the Office of Federal Student Aid (FSA) encourages borrowers to submit ECFs in order to verify that their employment qualifies under the program. Submitting an ECF allows for FSA to send the borrower specific information about the program. FSA collaborated with SBST in 2015 on a pilot to test the effectiveness of sending emails to encourage borrowers to submit an ECF.

Methods. In November 2015, FSA sent emails to a random sample of 55,221 borrowers currently enrolled in an income-driven repayment plan encouraging them to submit an ECF. FSA randomly assigned borrowers to receive an email with one of four different subject lines. An additional 54,779 borrowers were randomly selected for the control group. FSA compared email open rates across the subject lines and estimated the effects of receiving any email on ECF submission rates and ECF error rates.[49]

Results. The subject lines that were most effective for getting borrowers to open emails were declarative statements. The subject lines, "Verify your eligibility for loan forgiveness" and "[Borrower name] your student loans could be forgiven" performed best with 54.0 percent of borrowers opening emails with each subject line vs. 48.3 percent for "How to get your student loans forgiven" and 46.4 percent for "The surprising way

to have student loans forgiven." Being sent any email increased ECF submissions three-fold, from 0.09 percent to 0.28 percent, a difference of 0.19 p.p., ($p < 0.01$, 95% CI [0.14, 0.24]).

Conclusions. The pilot had encouraging results. Emails generated a three-fold increase in ECF submission without increasing the error rate.[50] FSA is using the results from the pilot to inform a large-scale PSLF email campaign targeting approximately three million borrowers that is currently in the field.

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[48] The College Cost Reduction and Access Act of 2008 established October 1, 2007 as the effective date for the beginning of the PSLF.

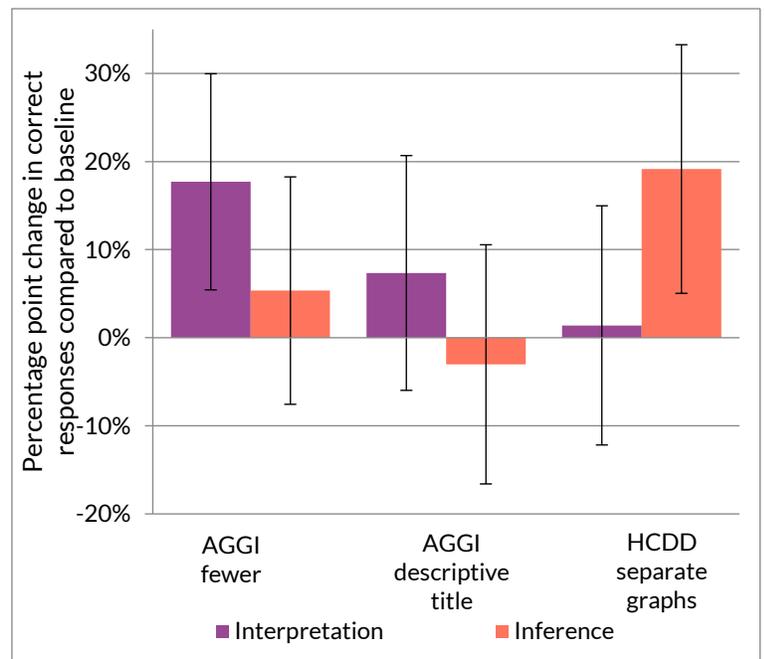[49] The error rate is the rate of forms that do not successfully establish qualifying employment.

[50] The error rate conditional on submitting an ECF for the treatment group (33.8 percent) was statistically indistinguishable from the control group (36.0 percent; difference=-2.23, p=0.78, 95% CI [-17.85, 13.39]).

SBST 2016 Project Abstract

Agency Objective. Assess and improve the understandability of graphical indicators of climate change by reducing complexity and displaying descriptions of key indicator messages.

Background. The U.S. Global Change Research Program (USGCRP) makes available figures of climate data, including a set of indicators. Developed by climate impact experts and stakeholders, the indicators are intended to communicate scientific facts, inform decision making, and illustrate progress and change. The effectiveness of indicators for informing the public and decision makers depends in part on their understandability: their abstractness, complexity of patterns portrayed, and graphical techniques. The research team gauged the understandability of 14 existing USGCRP indicators using an online survey of a sample of the U.S. population. For each indicator, approximately 100 respondents were asked between three and six questions designed to gauge (1) how successfully indicator information was interpreted, and (2) whether this information was used correctly in making inferences about their meaning. The two indicators that had the lowest understandability were selected for redesign.

Methods. Two versions of the Annual Greenhouse Gas Index indicator were created: the first eliminated one of the y-axes, and the second changed the title to reflect the key message of the indicator. The Annual Heating and Cooling Degree Days indicator was redesigned by depicting two related trends as separate graphs instead of a single paired bar graph. A second online survey asked new samples of 75–100 respondents the same questions to test whether the design changes had an effect on understandability.

Results. For the Annual Greenhouse Gas Index, eliminating one of the y-axes increased successful interpretation of the indicator by 18 percentage points, from 57 to 75 percent ($p < 0.01$, 95% CI [5.43, 29.96]) but did not improve correct inferences ($p = 0.42$, 95% CI [-7.56, 18.26]). Using a more descriptive title did not lead to a significant improvement in interpretation or inference. For Annual Heating and Cooling Degree Days, separating paired bar graphs did not improve interpretation but did increase correct inferences by 19 percentage points, from 47 to 66 percent ($p < 0.01$, 95% CI [5.04, 33.26]).

Conclusions. Indicator effectiveness is best achieved through clarity of the visual key message rather than increased complexity in a single graphic. Similar tests and improvements may help improve understandability of indicators. However, not all changes aimed at indicator simplicity or clarity result in significant improvements in understandability.[51]

Federal Health Insurance Marketplace Enrollment Emails

Email framing impacts open and click rates, but does not have a detectable effect on health insurance enrollment

Agency Objective. Assist uninsured Americans with completing their health insurance application by sending behaviorally designed emails prior to the deadline for open enrollment.

Background. During the Open Enrollment Period, qualifying individuals and families can purchase health insurance plans through the Federal Health Insurance Marketplace (FHIM).[52] For the 2015 enrollment season, the close of open enrollment was February 15, 2015. As of early February 2015, millions of people had visited HealthCare.gov and started an online account, but had not yet submitted an application and selected a plan. The Department of Health and Human Services (HHS), in collaboration with SBST, developed, sent, and tested variations of emails to assist these individuals with completing their insurance application in time.

Methods. Many trials were run; we report here on a small number of trials that we selected before results were inspected. In a trial using deadline framing, three days before the open enrollment deadline, individuals who had registered for a HealthCare.gov user account but not yet enrolled in an insurance plan were randomly assigned to be sent one of two email variants encouraging them to enroll (n = 7,318,780).[53] The email variants framed the time left until the deadline either as "3 days" (emphasizing numerical nearness) or "72 hours" (emphasizing deadline urgency) in the email subject and body. All other content in the email about how to enroll was held constant across both email variants.

In a trial using different framing of progress toward the goal of enrolling in an insurance plan,[54] individuals were randomly assigned to receive an email with one of two progress tracker graphics to mark the steps involved and the individual's progress towards picking an insurance plan (n = 95,311). All recipients are placed at the "Pick a Plan" step, but were randomly assigned for that step to be placed either in the middle or at the last step of the tracker graphic, varying the recipient's perception of their progress towards picking a plan.

In two trials focused on individual and social motivations, content which cued personal responsibility was compared to content which cued responsibility to family. In one iteration, individuals were randomly assigned to receive either an email with personal motivations ("Do it for yourself: Submit your application") or a generic control ("Your application is ready for review") message in the body of the email. In the second iteration, individuals were randomly assigned to receive an email emphasizing either personal or family benefits in the email subject and body ("Benefits for you" and "Protect yourself," compared to "Benefits for your family" and "Protect yourself and your family").

Results. In the deadline framing trial, 7.74 percent of individuals who received the 3 days framing opened the email, and 0.59 percent clicked through. For individuals who received the 72 hours framing, 8.00 percent opened the email (difference = 0.26 p.p., $p < 0.01$, 95% CI [0.22, 0.30]) and 0.66 percent clicked through (difference = 0.06 p.p., $p < 0.01$, 95% CI [0.05, 0.07]). By the February 15 deadline, 0.03 percent of individuals in each group had enrolled in insurance, with no statistically significant difference from the two framings (difference < 0.01 p.p., $p = 0.95$, 95% CI [0.00, 0.00]).

In the goal progress trial, there were no significant effects on open or click rates of varying individuals' perception of progress towards

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[52] For more information on the FHIM, including the Open Enrollment Period, see www.healthcare.gov.
[53] The 7,318,780 individuals were divided into six similarly-sized subgroups, based on how much information they had entered into their HealthCare.gov account. Within each

subgroup, individuals were randomly assigned to one of the two email variants.
[54] Clark L. Hull, "The Goal-Gradient Hypothesis and Maze Learning," *Psychological Review* 39.1 (1932): 25-43.

picking a plan. Consistent with the findings on deadline framing, we do not observe meaningful differences in enrollment: enrollment was 0.16 percent in the "middle step" group, compared to 0.14 percent in the "last step" group (difference < 0.01 p.p., *p*=0.51, 95% CI [-0.03, 0.07]).

In the first personal motivations trial, individuals who received the personal motivation email had lower open and click rates than individuals who received the generic control email. Open rates were 13.84 and 14.67 percent, respectively (difference = 0.83 p.p., *p* < 0.01, 95% CI [0.72, 0.94]). Click-through rates were 1.61 and 2.14 percent, respectively (difference = 0.53 p.p., *p* < 0.01, 95% CI [0.48, 0.57,]). Differences in enrollment rates could not be precisely estimated, with 0.03 percent enrollment in each group (difference < 0.01 p.p., *p* = 0.17, 95% CI [0.00, 0.01]).

In the second personal motivations trial, individuals who received the personal motivation email had higher open rates than individuals who received the family motivation email: 12.36 percent compared to 11.73 percent (difference = 0.63 p.p., *p* < 0.01, 95% CI [0.50, 0.77]). There was no detectable effect on click rates between the groups (difference = 0.01 p.p., *p* = 0.70, 95% CI [-0.02, 0.04]). Enrollment rates were 0.014 percent and 0.008 percent in the personal and family motivation groups, respectively (difference = 0.006 p.p., *p* < 0.01, 95% CI [0.00, 0.01]), a statistically significant difference though small in magnitude.

Conclusions. Variations in framing an email about health insurance enrollment—hours until deadline rather than days; generic email rather than personal motivation; personal motivation rather than family motivation—can make individuals more likely to open their email and click through. However, even precisely estimated differences in open and click rates do not translate into large differences in health insurance enrollment rates, which may reflect some of the limitations of email campaigns. That is, email may have a limited impact on behaviors like enrollment.

Test / Group	Open (p.p.)	Click (p.p.)	Enroll (p.p.)	N
Deadline Framing				
3 days	7.74	0.59	0.03	3,659,230
72 hours	8.00	0.66	0.03	3,659,550
Difference p-value 95% CI	-0.26*** p=0.0000 [-0.30,-0.22]	-0.06*** p=0.0000 [-0.07,-0.05]	0.00 p=0.9501 [-0.00,-0.00]	
Goal Progress				
Middle step	15.42	1.75	0.16	47,711
Last step	15.79	1.68	0.14	47,600
Difference p-value 95% CI	-0.38 p=0.1095 [-0.84,0.08]	0.01 p=0.4235 -0.10,0.23	0.00 p=0.5106 [-0.03,0.07]	
Personal Motivations				
Personal motivation	13.84	1.61	0.03	743,522
Generic control	14.67	2.14	0.03	743,609
Difference p-value 95% CI	-0.83*** p=0.0000 [-0.94,-0.72]	-0.53*** p=0.0000 [-0.57,-0.48]	0.00 p=0.1706 [-0.01,0.00]	
Personal motivation	12.36	0.60	0.01	472,257
Family motivation	11.73	0.59	0.00	471,910
Difference p-value 95% CI	0.63*** p=0.0000 [0.50,0.77]	0.01 p=0.6987 [-0.02,0.04]	0.01*** p=0.0051 [0.00,0.01]	

Notes: For each of the three sets of trials described above, the table shows levels and differences across treatment conditions for three outcomes: email open rates, click rates, and enrollment rates. * p<0.10; ** p<0.05; *** p<0.01

https://sbst.gov

SBST 2016 Project Abstract

Agency Objective. Increase the awareness and utilization of Virtual PEER Forums and online resources for military caregivers using an email that directs mailing-list subscribers to an interactive web-based activity.

Background. Virtual PEER (Personalized Experiences, Education, and Resources) Forums provide an opportunity for those caring for ill and wounded service members to meet remotely with their peers in real time to provide and receive input in the form of knowledge and resource sharing, as well as socioemotional support. The Offices of Military Community and Family Policy and Warrior Care Policy sought to increase awareness and utilization of Virtual PEER Forums by those who are eligible to participate, along with increasing general awareness of the online resources available to this population.

Methods. The Department of Defense (DoD) Office of Warrior Care Policy (WCP) worked with SBST to explore improvements to existing communication about monthly Virtual PEER Forums for military caregivers. The team designed an activity for engaging blog subscribers in the PEER Forums.

In collaboration with WCP, SBST designed two primary changes to the existing outreach strategy. First, the team used language (in both the subject line and email body) that emphasized caregivers *receiving* support from their peers versus *giving* support to their peers. All individuals who self-subscribed to an email mailing list maintained by WCP received one of two versions of the email, emphasizing either receiving or giving support.

In addition, SBST designed an interactive web-based activity to encourage individuals to more actively engage after clicking on a link in the email. This link directed individuals to a short (2 minute) web activity where they were able to self-assess their knowledge of the resources provided by WCP.[55]

Results. The test was conducted in July 2016. Among the group receiving emails emphasizing the *receipt* of support, 5,927 emails were delivered, leading to a 16.4 percent unique open rate and a 2.4 percent click-through rate to the web-based activity. Among the group receiving emails emphasizing *giving* support, 5,926 emails were delivered with a 15.3 percent unique open rate and a 1.9 percent click-through rate, a difference of 1.1 percent (p=0.1, 95% CI = [-0.20, 2.43]), and 0.5 percent (p=0.05, 95% CI = [0.00, 1.04]) respectively.[56]

Forty-seven percent of individuals who began the web-based activity completed it, and five new caregivers signed up for the July forum—three from the group who received emails emphasizing *giving* support and two from the group who received emails emphasizing *receiving* support. In addition, during the three-day period directly after the emails were sent, WCP reports that the daily views to the Caregiver Resource webpage increased by 70 percent relative to the average daily views in 2016 to date.

Conclusions. The test comparing *receiving* and *giving* language suggested that highlighting the benefits to subscribers increased email open rates, though not click-through rates.

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[55] No information was collected during this web activity.

[56] All open and click-through data was collected within two days of sending, so the rates reported here represent short-term responses.

SBST 2016 Project Abstract

Agency Objective. Increase patients' access to online patient portals and health information technology.

Background. The Office of the National Coordinator for Health Information Technology (ONC) is charged with nationwide implementation and advancement of health IT. The use of electronic health records (EHRs) has the potential to yield benefits for patients and operational benefits for both patients and providers.[57] The Medicare and Medicaid EHR Incentive Programs provide financial incentives for providers to adopt and demonstrate "meaningful use" of EHRs (for example, by having patients view, download, or transmit their health records). ONC, SBST, and a local health care system partnered to identify low-cost and scalable solutions to encourage patients to enroll and use the patient portal component of the health care system's EHR.

Methods. The local health care system has an EHR system that it owns and maintains. When a patient visits a provider, the patient receives a paper After Visit Summary (AVS) that contains the medical details of the visit. On the last page of the AVS, patients that do not already have an active online patient portal account will find an activation code and instructions on how to activate their online patient portal account. SBST worked with ONC and the local health system to revise the AVS to make benefits of EHR salient, highlight clear action steps, and encourage immediate action. The revised AVS was implemented for all primary care clinics within the local health care system on August 25, 2015, while system non-primary care providers and affiliates continued to use the original AVS. Office operations made random assignment by patients or providers infeasible, so the new AVS was tested using a difference-in-differences estimation approach. The difference in activation rate for system primary care patients before and after August 25, 2015 was compared to the difference in activation rate of two separate patient groups during the same time periods: 1) non-primary care providers of the local health care network, and 2) primary care providers of a different health care system that uses the same online patient portal system as our partner health care system.

Results. A difference-in-differences estimate suggests that the revised AVS instructions lead to a 9.98 percentage increase in the probability of online patient portal account activation (p=0.07, 95% CI = [-0.69, 20.66]).[58]

Conclusions. There are promising signs that clear actions steps may encourage patients to access the online patient portal component of their health care system's EHR. However the study can be improved with better ability to identify the study population and having more comparable treatment and comparison sites.

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[57] Congressional Budget Office, *Evidence on the Costs and Benefits of Health Information Technology*, (2008); Beverly Bell and Kelly Thornton, "From Promise to Reality: Achieving the Value of an EHR: Realizing the Benefits of an EHR Requires Specific Steps to Establish Goals, Involve Physicians and Other Key Stakeholders, Improve Processes, and Manage Organizational Change," *Healthcare Financial Management* 65 (2011): 51–57.

[58] The regression includes indicators for when the AVS code was generated relative to the office visit, and standard errors are clustered at the facility level.

https://sbst.gov

Accountable Care Organization (ACO) Voluntary Alignment
Encouraging Medicare beneficiaries to self-identify as ACO patients

SBST 2016 Project Abstract

Agency Objective. Encourage Medicare beneficiaries to identify and align with their main health care providers in Accountable Care Organizations (ACOs).

Background. By tying payments to care outcomes, ACOs can save money while potentially improving patient health.[59] ACOs led to an estimated $1.29 billion in total savings since 2012.[60] However, the success of the ACO model requires identifying and matching Medicare beneficiaries to an ACO who will be held accountable for their care. Traditionally, beneficiaries have been prospectively aligned with ACOs based on past claims data. This type of alignment, based on past claims rather than an affirmative choice by the beneficiary, can lead to turnover based on evolving patterns of patient claims, which in turn can lead to instability in the patient population for which ACOs are accountable.

Methods. To address the issue of turnover in ACO patient populations, the Center for Medicare and Medicaid Innovation (CMMI) tested a new method for alignment called *voluntary alignment*, which asks beneficiaries to identify their main doctor. As part of this effort, CMMI and SBST collaborated on the design and test of the letter and form by which beneficiaries would voluntarily align. The test varied both the length and the content of the introductory letter, as well as the inclusion or exclusion of the Centers for Medicare and Medicaid Services (CMS) logo, to identify the best way to communicate about voluntary alignment. The test was conducted in 2014 among beneficiaries at five participating Pioneer ACOs. Letter variants were randomized at the individual level, and were sent to 119,512 beneficiaries in total.

Results. The overall response rate to the letter was 37.2 percent. The overall confirmation rate among those responding was 94 percent. There were not substantial differences in response rates across the letter designs; response rates ranged from 35.6 to 38.3 percent. The only pairwise difference that was statistically significant was between the letters with the lowest response rate (short letter without the Medicare logo) and the highest (long letter without the Medicare logo) ($p < 0.05$, 95% CI [0.019, 0.035]). Confirmation rates were somewhat higher for beneficiaries sent the longer letter—35 percent, compared with 31 and 33 percent for the shorter letter (without and with the logo, respectively).

Conclusions. The project indicated the operational feasibility and potential for voluntary alignment of ACO patient populations. Based on this pilot, CMMI has continued to refine this approach to alignment, and voluntary alignment as a supplement to claims-based alignment is included as part of the Next Generation ACO model and the Medicare Shared Savings Program Track 3.[61] The variations in letter and form designs did not lead to significantly different responses from Medicare beneficiaries.

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[59] Hoangmai H. Pham, Melissa Cohen, and Patrick H. Conway, "The Pioneer Accountable Care Organization Model: Improving Quality and Lowering Costs," *JAMA* 312 (2014):1635–1636.

[60] https://www.cms.gov/Newsroom/MediaReleaseDatabase/Press-releases/2016-Press-releases-items/2016-08-25.html

[61] See the description of beneficiary alignment here: https://innovation.cms.gov/Files/fact-sheet/nextgenaco-comparefactsheet.pdf. See description of the Track 3 program here: https://www.cms.gov/newsroom/mediareleasedatabase/fact-sheets/2015-fact-sheets-items/2015-06-04.html.

https://sbst.gov

SBST 2016 Project Abstract

Agency Objective. Increase tax filing compliance and EITC participation rates among lower-income individuals who did not file a tax return. [62]

Background. Income tax compliance is a key goal of the Internal Revenue Service (IRS). A proportion of noncompliance is made up of those who never file a tax return—including those who might receive a refund if they filed. The Earned Income Tax Credit (EITC) is among the largest Federal government programs providing assistance to working, lower-income Americans, sending over $66 billion to more than 27 million families in 2015. [63] Eligible filers claim the credit as part of filling their annual Federal income taxes, and receive the credit in the form of a tax refund. The credit increases with earnings up to a maximum amount before phasing out at higher levels of income. While overall EITC participation rates among eligible households are relatively high, at an estimated 80 percent, the remaining eligible population represents millions of individuals each year who fail to claim the credit, either by filing a return and failing to claim the credit or not filing a return. [64]

Methods. Researchers at the Internal Revenue Service (IRS), in collaboration with SBST members at GSA and academic researchers, tested the impact on tax filing and EITC participation of mailing notices to individuals potentially eligible for the EITC but who did not file a tax return in recent years. In addition to a control group that received no mailing, six treatment groups received combinations of behaviorally informed postcards and brochures, highlighting the recipient's potential eligibility for the EITC, and drawing on previous studies sending notices to individuals who filed but did not claim the EITC. A sample of 360,352 was drawn from the population of roughly individuals estimated to be eligible but who failed to file in either 2011 or 2012; of this group, 199,910 were randomly assigned to a treatment and 160,442 to control.

Results. The notices lead to an increase in the rates of individuals filing a 2013 tax return between 0.6 and 1.0 percentage point, depending on the model. A simple comparison of filing rates between the treatment and control groups suggests a 1.0 percentage point increase in filing ($p < 0.01$, 95% CI [0.006, 0.014]), while a model that incorporates other factors associated with filing such as gross income and potential EITC suggests a treatment effect of 0.6 percentage points ($p < 0.01$, 95% CI [0.002, 0.01]). The impact was largest for those sent a postcard early in the tax season. Conditional on filing, there were not significant differences in the fraction of individuals claiming the EITC. However, treatment individuals did receive a greater EITC in 2014, by about $25 on average ($p < 0.01$, 95% CI [13.2, 36.4]).[65]

Conclusions. The notices were effective at modestly increasing the rate of tax filing among the targeted population; while they did not increase the rates at which individuals claimed the EITC, they did increase the amount of EITC dollars paid to treatment individuals. Interestingly, the effect of the notices appeared to be transitory. The study tracked the effects on filing a year later, in 2015, finding no differences in filing rates between treatment and control individuals. The project also sent reminder notices in the second year to a randomly selected subsample of individuals who filed in year one of the study; the reminder notices increased the rate of tax filing, suggesting the importance of ongoing communications and reminders.

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[62] For a full report on this project, see: John Guyton, Dayanand S. Manoli, Brenda Schafer, and Michael Sebastiani, "Reminders & Recidivism: Evidence from Tax Filing & EITC Participation among Low-Income Nonfilers," (NBER Working Paper No. 21904, 2016).
[63] See: https://www.eitc.irs.gov/EITC-Central/eitcstats

[64] See https://www.eitc.irs.gov/EITC-Central/Participation-Rate. See also Dean Plueger, "Earned Income Tax Credit Participation Rate for Tax Year 2005," (IRS Working Paper, 2009).
[65] Treatment individuals also on average both paid larger balances and received larger refunds in 2014, suggestive that the main effect of the notice was to increase filing in general.

SBST 2016 Project Abstract

Agency Objective. Increase subscription rates to monthly Military OneSource electronic newsletter among interested active duty service members using behaviorally designed email communications.
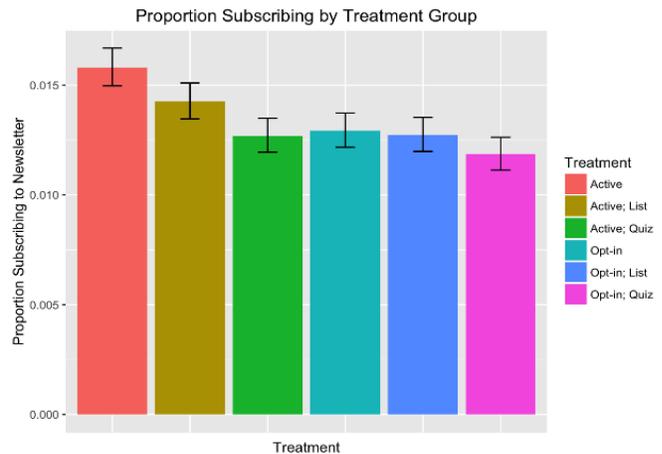
Background. Military OneSource is a Department of Defense (DOD)-funded program that provides comprehensive information on military life to service members and their families. Its monthly OneSource eNewsletter offers a simple way to stay up to date on resources and programs relating to a variety of issues from deployment and moving to spousal employment and education. There are currently 60,000 subscribers, representing a relatively small fraction of the potential audience.

Methods. The DOD and the Social and Behavioral Sciences Team (SBST) collaborated to compare the effectiveness of different modes of email communication in encouraging members of the military to subscribe to the newsletter. DOD and SBST designed six email variants. Two versions of the email varied whether subscription was presented as a simple opt-in procedure (clicking on link) or an active choice to subscribe (or not).[66] The four other email versions described the benefits of subscription, but varied whether this information was presented as either a list or a quiz. DOD provided SBST with a list of 491,879 emails that were randomly assigned to receive one of the six email communications.[67,68]

Results. Overall, the study added over 6,000 new subscribers to the newsletter, expanding the subscription list by more than 10 percentage points; the study spurred 8,700 web visits across web browsers and devices. Average rates of subscription across treatment conditions were generally low (between 1.19 and 1.58 percent). Emails that presented the decision to subscribe as an active choice (i.e. "Yes I want to take advantage of the eNewletter benefits" vs. "No, I prefer not to stay in the loop") outperformed those that simply provided a web link, generating an average subscription rate of 1.43 vs. 1.25 percent, a difference of 0.17 p.p. ($p < 0.01$, 95% CI [0.11,0.24]) and a rate of new website visits of 1.9 vs. 1.6 percent, a difference of 0.3 p.p. ($p < 0.01$, 95% CI [0.2,0.4]). The most effective communication strategies excluded lists or quizzes and kept the emails short (1.43 vs. 1.29 percent subscriptions (difference = 0.15 p.p., $p < 0.01$, 95% CI [0.08, 0.22]) or 2.1 vs. 1.6 percent new website visits, (difference = 0.5 p.p., $p < 0.01$, 95% CI [0.4,0.6])).

Conclusions. Simple, clear communications that present decisions as an active choice are effective at increasing subscriptions. The way in which the benefits of that action are presented also matters. Lists appear more effective than quizzes, but brevity is most important.

Proportion Subscribing by Treatment Group

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[66] See, for example, Punam Anand Keller, Bari Harlam, George Loewenstein, and Kevin G. Volpp, "Enhanced Active Choice: A New Method to Motivate Behavior Change," Journal of Consumer Psychology 21 (2011): 376–383.

[67] Emails were sent out in batches of about 12,000 a day. DOD then provided SBST with a list of new subscribers to the newsletter along with their dates of subscription as well as data recording the number of times links in the emails were clicked to visit the newsletter page.

[68] There were 7,759 new subscribers during the study period, 6,582 of which were matched to cases in the experiment because they provided the same email and/or name. Subscription results presented here assume no systematic differences between people we could match and people who we could not match. Website visits are a proportion of total emails sent and involve no missing data. All comparisons reported here are statistically distinguishable at p<.05.