BOND Implementation and Evaluation

Final Evaluation Report

Volume 2 – Technical Appendices

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List of Exhibits

Acronyms Used in This Report

AEE	Annual Earnings Estimate
AIME	Average Indexed Monthly Earnings
BODS	BOND Operations Data System
BOND	Benefit Offset National Demonstration
BPP	BOND Participation Period
BS&A	Benefits Summary and Analysis
BSAS	BOND Stand Alone System
BTS	Beneficiary Tracking System
BYA	BOND Yearly Amount
CDR	Continuing Disability Review
CPE	Centralized Post Entitlement
CWIC	Community Work Incentive Coordinators
DAC	Disabled Adult Child
DAF	Disability Analysis File
DBAD	Master Beneficiary Record, Disabled Beneficiary and Dependent files
DWB	Disabled Widow/Widowers Benefits
EN	Employment Network
EOYR	End of Year Reconciliation
EPE	Extended Period of Eligibility
EXR	Expedited Reinstatement
EWIC	Enhanced Work Incentives Counseling, or Counselor
FTE	Full-Time Equivalent
GP	Grace Period
I&R	Information and Referral
IRP	Initial Reinstatement Period
IRS	Internal Revenue Service
IRWE	Impairment-Related Work Expenses
MBI	Medicaid Buy-In
MBR	Master Beneficiary Record
MEF	Master Earnings File
METB	Marginal Excess Tax Burden
NCI	Non-Countable Income
ORDES	Office of Research, Demonstration and Employment Support
PHUS	Payment History Update System
SGA	Substantial Gainful Activity
SSA	Social Security Administration
SSDI	Social Security Disability Insurance
SSI	Supplemental Security Income
SSR	Supplemental Security Record
TWP	Trial Work Period
VR	Vocational Rehabilitation
WIC	Work Incentive Counseling, Or Counselor
WIPA	Work Incentives, Planning, and Assistance

Terminology

1. **BOND subjects:** Beneficiaries assigned to any of the five BOND treatment or control groups, at either stage (see **Exhibit 1-1)**. Terms for subjects in specific groups are as follows:
   a. **Treatment subjects:** All subjects offered the use of the benefit offset, including:
      i. **T1 subjects** or **Stage 1 treatment subjects:** Those offered the offset at Stage 1.
      ii. **Stage 2 treatment subjects:** Those offered the offset at Stage 2, including:
         (1) **T21 subjects:** Stage 2 volunteers offered the offset, but not offered enhanced work-incentives counseling.
         (2) **T22 subjects:** Stage 2 volunteers offered both the offset and enhanced work-incentives counseling.
   b. **Control subjects:** Those whose benefits will continue to be determined by current law.
      i. **C1 subjects:** Those assigned to the Stage 1 control group.
      ii. **C2 subjects:** Stage 2 volunteers assigned to the Stage 2 control group.
2. **BOND users:** Those treatment subjects who take up a BOND treatment. These include:
   a. **Offset users –** All treatment subjects who have their benefits reduced by the offset.
   b. **EWIC users –** All treatment subjects who use EWIC services. They can only be subjects in the T22 group.
   c. **WIC users –** All treatment subjects who use WIC services. They can be subjects in the T1 or T21 groups.

Appendix A. Additional Information on Data Sources and Outcomes

This appendix describes the data sources used in the BOND Final Evaluation Report. (See summary Exhibit 2-1 in Volume 1 for a list of the data sources). Section A.1 provides additional details about the evaluation's confirmatory outcomes: annual earnings and SSDI benefits. The chapter also provides details about how the evaluation team constructed measures of understanding of offset rules, use of vocational rehabilitation (VR), and Ticket to Work (TTW) services.

A.1 SSDI Benefits

In Volume 1, we use a different measure of SSDI benefits than that used in previous BOND evaluation reports. In this section, we discuss the ideal-but-unobserved measure for policy purposes (*benefits paid for*), the measure used in Volume 1 (which we call "*benefits due*"), and the measure used in previous BOND reports (which we call "*benefits paid*").

The conceptually ideal measure of SSDI benefits for the evaluation is the *benefits paid for* a year. This is the measure that captures the long-run cost to the SSDI Trust Fund for that particular year. For ease of reference and to distinguish the term, we use BP4 as an acronym for *benefits paid for*. BP4 can only be known once SSA has identified all retroactive adjustments, made all retroactive payments for any underpayments, and completed its efforts to collect repayments of overpayments. It is not feasible for the evaluation to measure BP4 because (1) data on repaid overpayments are difficult to obtain and (2) the collection of overpayments made during the analysis period will not be complete for many years, and some will never be collected. While it is not feasible to measure BP4, two benefit measures are available or can readily be constructed from SSA administrative data: *benefits paid* and *benefits due* in a year. We define BP4, *benefits paid* and *benefits due* below and highlight their relative strengths and limitations.

A.1.1. Benefits Paid For (BP4)

Definition

BP4 represent the benefit costs that eventually accrue to the SSDI Trust Fund because of the BOND subject's status during the analysis period, including any retroactive adjustments. This concept represents the ultimate benefit liability accrued by the SSDI Trust Fund. BP4 is the sum of the benefits SSA *should have paid* to a beneficiary (i.e. if there were no improper payments) plus any unrecovered overpayments.

It is not feasible to measure this value because, in practice, it may take many years until the recovery of overpayments is completed and the extent of unrecovered overpayments are known. Some beneficiaries have repayment plans that extend for many years, in some cases past 2049 (SSA Office of the Inspector General [OIG] 2017), and it is unclear in advance whether beneficiaries will meet all of their repayment obligations. One recent analysis found that 47 percent of overpayments were unrecovered 10 years after the overpayment was established (SSA OIG 2015).

A.1.2. Benefits Paid

Definition

Benefits paid in a year is the sum of the monthly benefit checks sent to a beneficiary in a year. This benefit measure is available in SSA's systems in real time. For this reason, we selected *benefits paid* in a year for the impact analysis conducted for the BOND snapshot and interim reports.

Comparison to BP4

The *benefits paid* measure differs from BP4 in several ways. First, the *benefits paid* measure captures only the information known at the time of payment and so includes any improper payments made in the period. Second, the *benefits paid* measure captures recovery of past overpayments and underpayments and so is not wholly aligned with contemporaneous earnings behavior. The *benefits paid* for the analysis period includes rectification of overpayments or underpayments that predate BOND—payments that presumably are unrelated to the earnings or other behavior of the beneficiary during the analysis period.

The inclusion of improper payments and the rectification of past improper payments in the *benefits paid* measure both create a vulnerability to impact bias when work CDR processing proceeds at different speeds in the treatment and control groups. As the interim reports have documented, work CDRs were processed more slowly in the treatment group than in the control group, leading to a backlog of cases in the treatment group. At the end of 2015, the percentage of treatment group work CDR cases that were more than 270 days old was 71 percent. The percentage for the control group was 2 percent (Hoffman et al. 2017). The backlog of pending treatment group work CDR cases was cleared during 2017. Slower work CDR processing for the treatment group means that improper payments were slower to be recognized in the treatment group, hence benefits paid would be an accurate reflection of contemporaneous earnings for a lower proportion of treatment subjects than control subjects. Accordingly, rectifications of overpayments (from both before and during the analysis period) were slower to be implemented for treatment subjects. The slower processing throughout the analysis period implies that the estimate of the offset's impact on *benefits paid* for the analysis period of 2011 to 2015 contains internal validity bias. This internal validity bias substantially decreases the attractiveness of *benefits paid* as the primary measure of SSDI benefits for this report.

Construction

We used Payment History Update System (PHUS) to construct the measure of *benefits paid* in a year for analyses reported in previous BOND reports. The variable we use is also known in the PHUS as "monthly benefits payable." We recode this variables so that negative values of benefits paid are set to $0 and sum this variable across the analysis period, but otherwise do not modify this variable. For primary beneficiaries, our measure of benefits paid aggregates the benefits paid to the primary as well as those due to dependent (non-disabled) spouses and minor children.[1]

A.1.3. Benefits Due

Definition

Benefits due in a year is the sum, across all months of the year, of the SSDI benefits that SSA should have paid to the beneficiary based on eligibility and earnings in the corresponding months. Unlike the recorded value of *benefits paid,* the recorded value of *benefits due* is subject to revisions. It is first recorded when SSA pays benefits for the month, but it is revised when SSA retroactively identifies improper payments.

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[1] Both the SSDI benefits paid and the SSDI benefits due measures we use include benefits for non-disabled spouses and minor children. The 2016 Annual Statistical Report on the SSDI Program shows that of all beneficiaries, non-disabled dependent family members are 14.8 percent of beneficiaries (1.2 percent are spouses, 13.2 percent are children under 18, and 0.4 percent are students ages 18 to 19). Average monthly payments are $324 for non-disabled spouses and $355 for children (SSA 2017a).

Hence, *benefits due* measured at time *X* will differ from *benefits due* measured at later time *Y* if SSA retroactively identified improper payments between time *X* and time *Y*.

The concept of *benefits due* used in this report differs in a small but important way from the benefit due variable present on the Master Beneficiary Record (Monthly Benefit Credited, or MBC). The evaluation team constructed the measure of *benefits due* to incorporate the beneficiary's payment status from the Ledger Account File (LAF) variable. For example, if benefits for a control group subject are suspended for a particular month, our measure of *benefits due* would be $0. In contrast, the value of the MBC variable is the entitled benefit amount, which is the benefit that would have been due had SSA not suspended benefits for the month, as indicated by the LAF code.

For this report, we extracted *benefits due* in May 2017 for the benefit months May 2011 to December 2015. The timing of extraction allows for retroactive adjustments over a period ranging from 72 months for the May 2011 benefit month to 17 months for the December 2015 benefit month. If we extracted a new file with *benefits due* one year later (in May 2018), we would expect some *benefits due* values in the analysis period to differ from those used in this report, particularly for 2015, the most recent year of analysis.

We have reason to expect further adjustments to *benefits due* to be small, however. This is because by May 2017 when the *benefits due* outcome was measured, enough time had likely elapsed since the analysis period that most of the retroactive adjustments needed had already been made. By mid-2017, there was no longer a large backlog of pending work CDRs for the treatment group. Such a backlog would have suggested that more retroactive adjustments to benefits during the analysis period were imminent. According to statistics from SSA's eWork system, in July 2017—two months after we extracted data for this report and 18 full months after December 2015—only about 5 percent of pending work CDRs for treatment subjects were more than 270 days (9 months) old and only about 1 percent of those for control subjects were that old (Chapter 4, Section 4.5.1). This means that relatively few work CDRs would have been pending in May 2017 for the BOND sample, so we would expect only very minor adjustments to *benefits due*. In addition, the small difference across treatment and control groups in long-pending cases (5 percent versus 1 percent) means that the threat to internal validity from unequal work CDR completion speed is low.

Comparison to BP4

One may conceptualize the final *benefits due* amount as follows: *Benefits due* after all retroactive updates is the amount SSA should have paid if no improper payments were made in the SSDI program. This final *benefits due* amount is also equivalent to what BP4 would be if SSA was ultimately successful in collecting all overpayments made during the year.

Hence, the impact of the offset on the final *benefits due* amount will differ from the impact of the offset on BP4 only to the extent that the offset has an impact on unrecovered overpayments.

Thus, there are two potential factors that could cause estimated impacts of the offset on *benefits due* to be biased as estimates of impacts on BP4: 1) retroactive adjustments that SSA had not yet made at the time we extracted the data could be unequal across assignment groups (i.e., inequality between treatment and control groups in the extent to which the benefits due amounts extracted in May 2017 are not "final"); and 2) impacts of the offset rules on overpayments that will never be recovered. Because we expect retroactive adjustments to *benefits due* after May 2017 to be small for both treatment and control groups,

for reasons indicated earlier in this section, we think that the first source of bias is fairly small, although not zero.

The second source of bias, due to an impact of the offset on unrecovered overpayments, might be important. Here is why the offset might reduce the amount of unrecovered overpayments:

- The analysis of impacts on work-related overpayments found that the aggregate amount of overpayments subject to future recovery is larger for control subjects than for treatment subjects (Exhibit 4-7).
- We expect SSA to be more successful in recovering overpayment debt from treatment subjects than from control subjects during the demonstration period. We expect this because SSA can collect overpayment debt from beneficiaries in current pay status (i.e., benefits are not suspended or terminated) by paying them less than benefits due. SSA cannot use this method for beneficiaries whose benefits are suspended.

If our hypothesis that the offset reduces the amount of unrecovered overpayments is correct, the offset's impact on BP4 will be smaller than the impact on the final *benefits due* amount. We discuss this issue in Chapter 7.

Comparison to Benefits Paid

As noted above, we expect the impact estimate on the May 2017 *benefits due* measure to be mostly free of the bias stemming from unequal work CDR processes across assignment groups. This stands in stark contrast to the impact estimate on the *benefits paid* measure, which we suspect suffers materially from this bias. The additional time for performing work CDRs in 2016 and 2017 allowed for the backlog of treatment group work CDR cases to be largely cleared. This effectively dissipated the impact estimate bias that would have been present had the *benefits due* measure been extracted at an earlier point (for example, in early 2016). On the other hand, this bias is permanently incorporated in the *benefits paid* measure. We therefore chose *benefits due* extracted in May 2017 over *benefits paid* as the primary measure to estimate impacts on SSDI benefits in this report.

Construction

We construct the measure of *benefits due* in a year that we use in analysis from the Master Beneficiary Record (MBR) variable "monthly benefit credited (MBC);" which is referred to as DUED in the Disability Analysis File (DAF). This variable is defined as "the amount that the beneficiary is, was or would have been paid or credited." Any overpayments, underpayments, or other deductions are not reflected in this variable. Rather, it is described as the "basic benefit amount." Indeed, MBC/DUED will contain a positive benefit amount regardless of whether or not a beneficiary was in current pay status. The DAF documentation instructs users to use this field only in conjunction with corresponding Ledger Account File (LAF) codes, which reflect the MBR payment status in each month. For all subjects (treatment or control) in current pay status, the benefit due is the MBC/DUED amount. For all subjects not in current pay status (LAF not equal to "Current payment status (C)" or "Current payment through Railroad Board (E)"), the benefit due is zero. For primary beneficiaries, our final measure of benefits due aggregates the benefits due to the primary as well as those due to dependent (non-disabled) spouses and minor children.

A.1.4. Summary

Exhibit A-1 shows a timeline of when the various measures become available for the example month of September 2013 (roughly halfway through the May 2011 to December 2015 Stage 1 analysis period). Exhibit A-2 compares which aspects of SSDI benefits are captured in each of the measures.

Exhibit A-1. Example of Time Necessary to Observe Different Measures of SSDI Benefits in September 2013

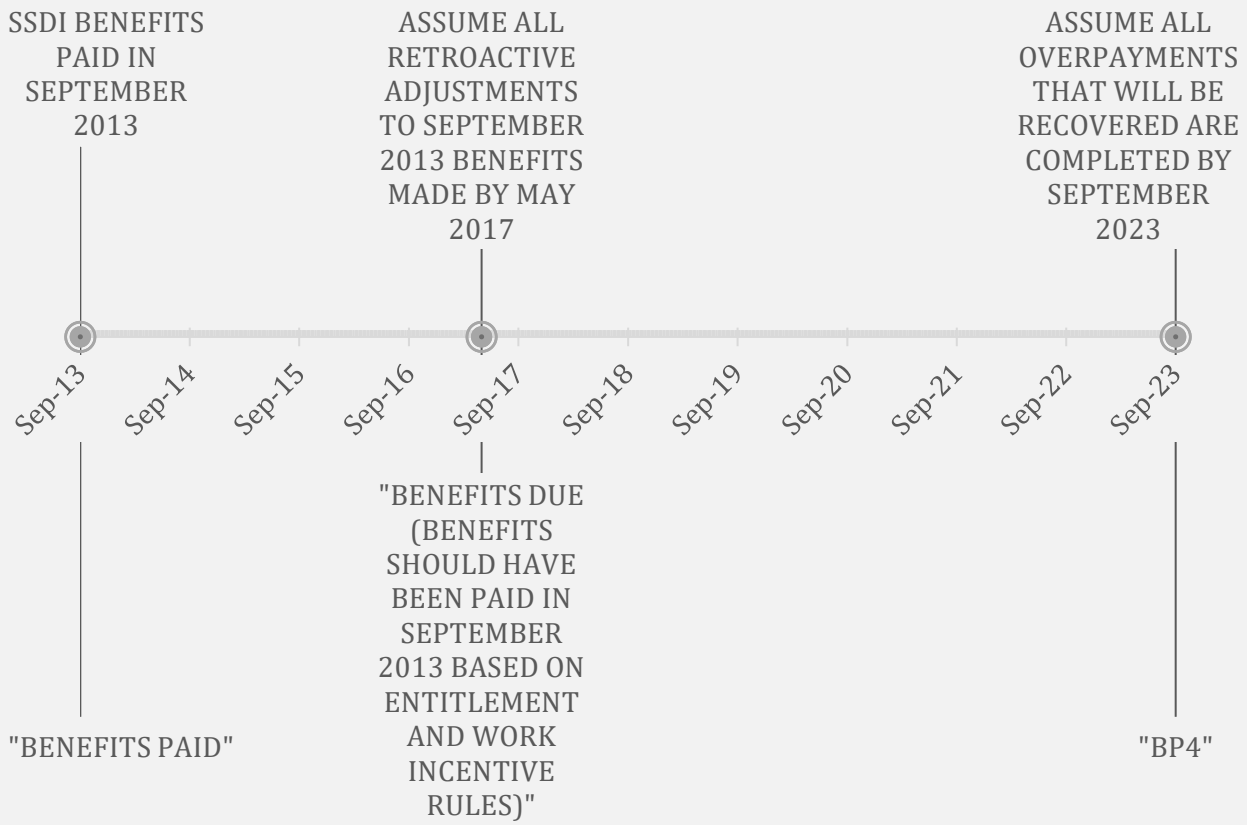


Exhibit A-2. Comparison of BP4, Benefits Paid, and Benefits Due Measures

Component of SSDI benefits in September 2013	BP4	Benefits Paid	Benefits Due (Benefits that should have been paid in September 2013 based on entitlement and work incentive rules [extracted in May 2017])
Benefits based on entitlement and work incentive rules, known at September 2013	✓	✓	✓
MINUS Retroactively recognized overpayment made in September 2013, after all retroactive adjustments (assume May 2017)	✓		✓
PLUS Retroactively recognized underpayment made in September 2013, after all retroactive adjustments (assume May 2017)	✓		✓
PLUS Unrecovered amount of overpayment made in September 2013 (assume known in September 2023)	✓		
PLUS Rectification of improper payments made prior to September 2013 (i.e., made in months that are not September 2013)		✓	

Exhibit A-2 shows that the common starting point for the three measures is the amount of benefits based on entitlement and work incentive rules (i.e., *benefits due*) that is known at the time of payment. This known amount at the time of payment may incorporate errors due to lack of earnings reporting by beneficiaries, lags in processing, or both. These errors are permanently included in the *benefits paid* measure. After time passes, errors are recognized and the amount of *benefits due* for the month is retroactively adjusted. Retroactively recognized overpayments are subtracted from *benefits due* and retroactively recognized underpayments are added. The amount of overpayments that are not fully recovered by SSA are part of the ultimate cost to the SSDI Trust Fund, and so are added to the BP4 measure.

The *benefits paid* measure also contains rectifications of improper payments (e.g., repayments of overpayments and lump-sum payments to correct for underpayments) from months previous to September 2013. The incorporation of rectifications for previous months means that the *benefits paid* measure may partially reflect earnings behavior from previous months and years. This implies a potential temporal misalignment to the September 2013 period.

There are few statistically significant differences in impacts using the measure of benefits due compared to benefits paid. Among Stage 1 subjects, there is no difference in the classification of impacts as achieving statistical significance of at least the 10 percent level and the magnitude of the impacts are not statistically different (Exhibit F-4). There are however, differences in the impacts of T21 vs C2 and T22 vs C2 across the two benefit measures. For example, for the T21 vs C2 comparison, the impact estimate for SSDI benefits in 2012-2015 is statistically significant when calculated using benefits due and when using benefits paid. The difference, however, is of a larger magnitude when calculated from benefits due

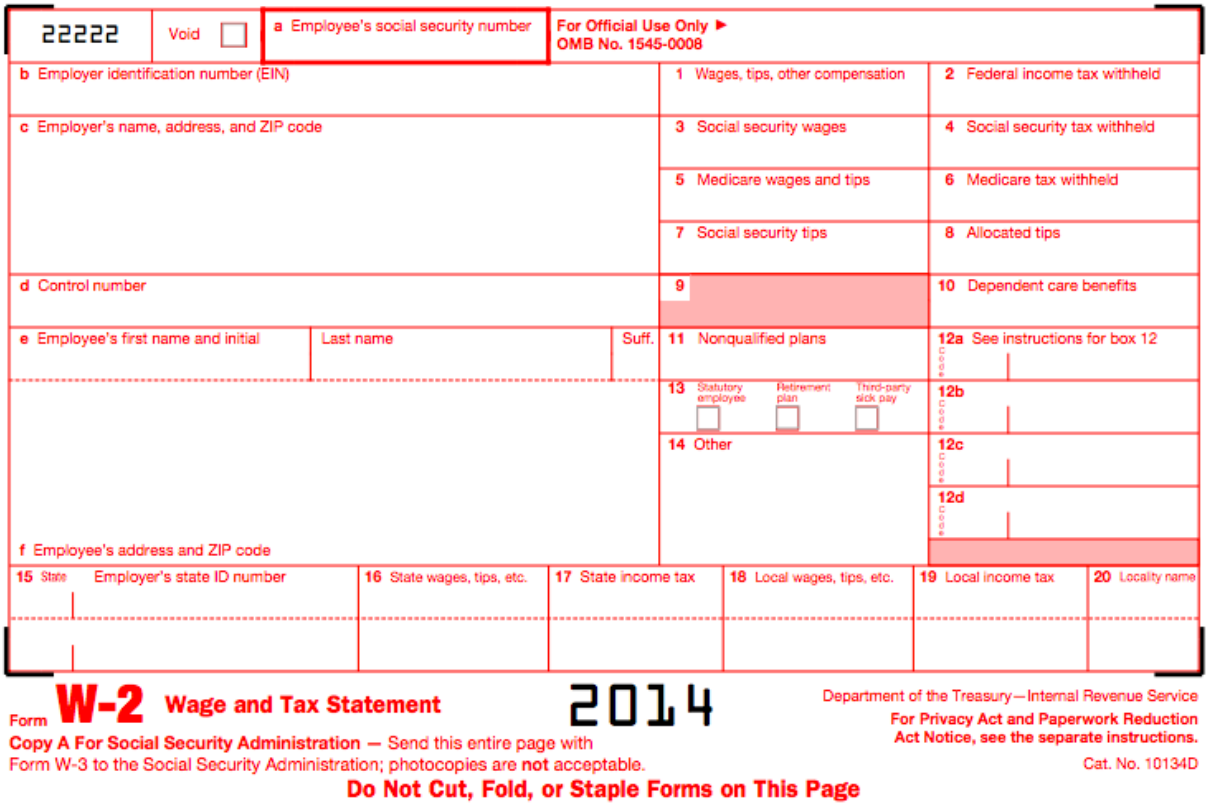
(Exhibit F-11). The same is true for the T22 vs C2 comparison (Exhibit F-12). We are unable to attribute these differences to any specific source.

A.2 Annual Earnings

The Social Security Administration made the Summary Segment of the Master Earnings File (MEF) available to this evaluation. The MEF is SSA's primary repository of earnings data for the US population. The MEF contains all information from the W-2 forms submitted annually by employers to SSA for each paid employee and the relevant information for calculating benefits from 1040-SE forms that self-employed individuals send to the IRS. The Summary Segment summarizes a limited set of data from the MEF. The Summary Segment does not include total earnings subject to income tax. Rather, the Summary Segment contains data on annual earnings that are subject to Old-Age, Survivors, and Disability Insurance (OASDI) taxes, otherwise known as Social Security taxes. The revenue from OASDI taxes funds insurance benefit payments to retired workers and their spouses and children; survivors of deceased workers; and disabled workers and their spouses and dependent children. We next describe how Social Security taxes are reported to SSA.

The W-2 form lists several types of earnings amounts (Exhibit A-3). Box 1 reports an employee's total wage, tips, and other compensation from a specific employer that is subject to income tax. Several types of wages are excluded from Box 1, such as payments to retirement accounts (401Ks). Social security taxable earnings are reported on W-2 forms in Box 3 ("Social security wages") and Box 7 ("Social security tips"); payments to retirement accounts are taxed, and therefore included. Social Security taxable earnings are capped at a maximum. For 2015, the maximum was $118,500 (SSA 2016a). Amounts above this maximum are not subject to Social Security taxes, and thus the sum of Box 3 and Box 7 will never exceed the maximum, regardless of what is reported in Box 1. The sum of Box 3 and Box 7 could be less than Box 1 (for example, because wages exceed the wage base limit). However, the sum of Box 3 and Box 7 could also be more than Box 1 (for example, payments to retirement accounts and dependent care accounts are taxable for Social Security in the year they are earned).

Exhibit A-3. W-2 Wage and Tax Statement



22222 Void ☐ a Employee's social security number | For Official Use Only ► OMB No. 1545-0008

b Employer identification number (EIN) | 1 Wages, tips, other compensation | 2 Federal income tax withheld

c Employer's name, address, and ZIP code | 3 Social security wages | 4 Social security tax withheld

5 Medicare wages and tips | 6 Medicare tax withheld

7 Social security tips | 8 Allocated tips

d Control number | 9 | 10 Dependent care benefits

e Employee's first name and initial | Last name | Suff. | 11 Nonqualified plans | 12a See instructions for box 12

13 Statutory employee ☐ Retirement plan ☐ Third-party sick pay ☐ | 12b

14 Other | 12c

12d

f Employee's address and ZIP code

15 State Employer's state ID number | 16 State wages, tips, etc. | 17 State income tax | 18 Local wages, tips, etc. | 19 Local income tax | 20 Locality name

Form **W-2** Wage and Tax Statement 2014

Department of the Treasury—Internal Revenue Service

Copy A For Social Security Administration — Send this entire page with Form W-3 to the Social Security Administration; photocopies are **not** acceptable.

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The Summary Segment of the MEF contains the summed total of the Social Security earnings amounts from all of the W-2 forms (Box 3 and Box 7) and the 1040-SE form posted to the MEF. Therefore, the summed totals of Social Security earnings amounts are the data available to the BOND evaluation. There are some disadvantages to relying on Social Security earnings as an overall earnings measure. Social Security earnings may be different from all employment income for the following reasons:

1. Not all jobs are covered by Social Security. Non-covered jobs include some state and local government positions and railroad workers. Only six percent of the US workforce does not participate in Social Security (SSA 2016b). For example, teachers in some states do not pay Social Security taxes on their earnings. Of the BOND sites, teachers in Colorado, Maine, and Massachusetts fall into this category.
2. For each W-2 and 1040-SE form, Social Security earnings are capped at a maximum taxable amount($106,800 for 2011, $110,100 for 2012, $113,700 for 2013, $117,000 for 2014, and $118,500 for 2015). However, we do not expect this fact to be a problem for the analysis because very few have earnings at or above that amount. In 2014, 0.03 percent of Stage 1 subjects had earnings equal to the 2014 maximum taxable amount of $117,000 and 0.01 percent had earnings above the 2014 maximum taxable amount. In addition, beneficiaries who are earning at or above that amount are unlikely to have a behavioral response to the offset.
3. Not all work and earnings will be reported on a W-2 or 1040-SE form (i.e. "under-the-table" earnings).

As the earnings data available on the Summary Segment of the MEF do not include all earnings countable towards SGA, our estimates of earnings, employment, and proportion working above BYA may have a small downward bias compared to measures defined by total earnings countable towards SGA.[2] In addition, the estimate of the impact of the offset on earnings, employment and proportion working above BYA may have a small downward bias if some who are encouraged to work choose jobs not covered by Social Security (item number one in the list, above). On the other hand, the estimate could have a slight upward bias due to the fact that the offset may induce some people with under the table earnings to report them. Measures of weekly earnings and employment taken from survey data should not be subject to the same source of bias (though they are subject to other biases; in particular, recall bias and non-response bias).

Employment is measured as any positive (non-zero) earnings. BYA thresholds for non-blind beneficiaries in the years 2011 to 2015 were $12,000, $12,120, $12,480, $12,840, and $13,080. For blind beneficiaries, the BYA thresholds for these years were $19,680, $20,280, $20,880, $21,600, and $21,840.

A.3 Other Outcomes

This section describes procedures used to construct two additional outcome measures used in the BOND Final Evaluation Report: knowledge of offset rules and use of VR and TTW services.

A.3.1. Knowledge of Offset Rules

The Stage 1 and Stage 2 36-month surveys asked treatment and control subjects about how their benefits and benefit eligibility are affected by earning above the SGA limit. Their survey responses allow us to address the important questions of "How well do treatment subjects understand the basic details of the offset offer 36 months after random assignment?" and for Stage 2, "Does EWIC improve understanding of the offset?" The following sections describe the survey questions and how the outcomes were constructed. These survey responses also allow us to compare understanding of offset rules among treatment subjects to knowledge of current law rules in their control group counterparts.

In the surveys, all Stage 1 and Stage 2 subjects were asked about how their monthly disability cash benefits would change if they were to earn more than the SGA limit after the Trial Work Period (TWP).

The questions on the survey were:

Introduction: *"Under the current rules of the Social Security Disability Insurance program, disability beneficiaries are allowed to earn up to $1010 per month without a change to your benefits. This limit is called the level of Substantial Gainful Activity or SGA and Social Security increases this limit each year to adjust for inflation. When disability beneficiaries go to work while receiving disability benefits, SSA ignores the cap of $1,010 for up to 9 months, no matter how much a beneficiary earns from work. (The SGA for a blind beneficiary is $1690.)"*

[2] Not available for this evaluation, the Social Security Administration also has records of Box 1 earnings in the Detailed Segment of the MEF. Still, Box 1 earnings data would not offer a complete picture of earnings countable towards SGA because not all work and earnings are reported on a W-2 or 1040-SE form.

"We'd like to know which of the following things you think would happen to your monthly disability cash benefits if you were to work and earn more than the SGA limit of $1010 per month after those initial months have passed. ([IF NEEDED:] The SGA for a blind beneficiary is $1690.) Thinking about the amount of your disability cash benefits, if you earned more than $1010 after those initial months…"

- Do you think your benefits would stay the same?
- Do you think you would lose your monthly benefits completely?
- Do you think your benefits would be reduced but that you would be able to keep receiving some of your monthly disability benefits?
- How do you think those benefits would be reduced?

From their responses to these questions, the evaluation team classified subjects as having one of these five perceptions.

- Benefits would stay the same
- Benefits would be reduced but not to $0
- Benefits would be reduced to $0
- Benefits would neither stay same, nor be reduced
- Don't know whether benefits would change

If subjects stated that they thought that their benefits would be reduced but not to $0, they were further classified by their perception of the reduction amount:

- By full amount of benefits (equivalent to "reduced to $0")
- By half, $1 reduction for $2 in earnings
- By other amount
- Don't know how much reduction

We define "correct understanding" differently for the control subjects (C1, C2) and the treatment (T1, T21, T22) subjects. For control subjects, a correct understanding is indicated if they answered "benefits would be reduced to $0". For treatment subjects, a correct understanding is indicated if they answered "benefits would be reduced but not to $0" in the first part of this question. This simple specification ignores the fact that some who answered "benefits would be reduced but not to $0" then answered the follow-up question by choosing "by full amount of benefits".[3] This simple specification also ignores the fact that "benefits would be reduced to $0" is a correct answer for treatment subjects when earnings above

[3] In Stage 1 36-Month Survey, three percent of treatment subjects who indicated "benefits would be reduced but not to zero" answered the follow-up question with the contradictory answer of "by full amount of benefits" (Hoffman et al. 2017). In Stage 2 36-Month Survey, one percent of treatment subjects who indicated "benefits would be reduced but not to zero" answered the follow-up question with the contradictory answer of "by full amount of benefits" (Geyer et al. 2017).

BYA are more than twice the level of full benefits and benefits are fully offset. The simplification is warranted because only a small proportion of treatment subjects have high enough earnings for benefits to be fully offset. In Stage 1, less than 1.5 percent had earnings above three times BYA in any year of the analysis period; in Stage 2, less than 3.5 percent.[4]

A.3.2. Data Sources for VR Service Use and TTW Payments

We use SSA administrative data to create outcomes to measure the impact of the BOND interventions on TTW and VR outcomes (Exhibit D-4). For the TTW outcomes, we use the 2015 DAF to create measures of TTW use (Ticket assignment) and associated TTW payments. First, we create an indicator of any Ticket assignment. We classify beneficiaries as a user if they had at least one active Ticket assignment for any part of the given analysis period. This measure captures Tickets assigned to ENs as well as state VR agencies.[5] Next, we measure the amount of payments made to ENs and state VR agencies. To create this measure, we sum payments that are due to work activity sufficient to trigger a payment to a provider to which the Ticket was assigned during the period. Of the roughly 72,000 BOND subjects who had a Ticket assigned during 2011 to 2015, 10.2 percent had a payment to a provider to which a Ticket was assigned during the period.

It is important to note that the TTW measures are unlikely to include all TTW payments through the end of the evaluation analysis period (2015). The source data in the 2015 DAF data used to measure EN payments (EN Payments Data) were extracted in October 2016 and the source data for VR payments (Vocational Rehabilitation Reimbursement Management System; VRRMS) were extracted in July 2016. If payments to providers occurred after these extraction dates, then they are not included in this report's analysis. Missing data for payments under the EN payment systems may be a particular issue because payments can be based on the monthly earnings and payment status of the beneficiary months or years after Ticket assignment.[6] In some cases, a provider that delivered services to a BOND subject before the end of 2015 might not expect to receive all potential payments until the end of 2018, or even later. The bulk of SSA payments to providers are cost reimbursement payments to VR agencies, which are paid more rapidly, although there may still be considerable delay. We expect that total payments to providers for the 2011-2015 analysis period include the bulk of SSA payments to VR agencies for Tickets in use through the cost reimbursement payment system in this period, but a smaller percentage of all payments that will eventually be made to VR agencies and other ENs through the TTW payment systems.

We use RSA-911 files to construct two measures of VR service use. Beneficiaries who used VR services are a subset of the TTW users captured by the measure of any Ticket assignment. We classify

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4 An earnings level of three times BYA is roughly the earnings level at which SSDI benefits would fully offset under the offset rules. If a beneficiary had monthly benefits equal to the SGA amount and had no non-countable income, then benefits would be fully offset at exactly the three times BYA level.

5 Historically, the majority of Ticket assignments are to state VR agencies. In 2010, the year before BOND random assignment began, 79 percent of new Ticket assignments were to VR providers (Schimmel et al. 2013).

6 We compared the completeness of the 2014 DAF data on TTW payments (to EN or VR providers) to the 2015 DAF as a proxy for the completeness of the DAF. We found that 83 percent of 2014 TTW payments recorded in the 2015 DAF were also recorded in the 2014 DAF. Hence, this suggests we should expect the 2015 DAF to include about 83 percent of 2015 TTW payments that will ultimately be recorded.

beneficiaries who signed an Individualized Plan for Employment (IPE) in the analysis period as having received any VR services.[7] We create a second measure, number of years using VR services, by counting the number of calendar years between the IPE date and the VR case closure date.

The RSA-911 files we used in the analysis do not include all BOND VR participants through the end of 2015. This is because the most recent file available for this analysis covered the period through September 30, 2015. In addition, the RSA-911 files only include data for closed VR cases. Hence, the RSA-911 files used for this analysis do not include BOND beneficiaries who used VR services during the analysis period but had cases closed after September 2015.

[7] Beyond Ticket assignment, we have no further information on actual use of services provided by ENs that are not state VR agencies.

Appendix B. Impact Methodology

This appendix describes the impact estimation methodology used in this report for the Stage 1 and Stage 2 impact analyses. Specifically, this appendix describes the estimation procedures, the multiple comparisons adjustment, the covariates included in the estimation model, the analysis sample and weights, and the analysis of impact magnitudes for subgroups. The impact analysis methodology has been documented in previous reports. For Stage 1, the impact methodology used in this report is also described in Appendix A of Wittenburg et al. (2015).. For Stage 2, the impact methodology is described in Appendix A of Gubits et al. (2017).

The Stage 1 impact estimates presented in this report are generalizable to the national population of SSDI beneficiaries. The Stage 2 impact estimates presented in this report are generalizable to the national population of SSDI-only beneficiaries (i.e. who do not concurrently receive SSI) who would have volunteered for Stage 2 had they been offered the opportunity to enroll in the study. The 10 BOND sites were chosen at random from the universe of 53 geographic areas that collectively include all SSDI beneficiaries in the nation. To achieve generalizability using data from these 10 sites, the analysis requires the use of weights that account for the random selection of sites with varying probabilities and appropriate standard error calculations. Construction of sample weights is described in sections B.1.6 and B.2.6 for Stage 1 and Stage 2, respectively. For appropriate standard error calculations, the analysis requires that tests of statistical significance have 9 degrees of freedom (10 sites, minus 1). To avoid unstable standard error estimates when true cross-site variance in impacts is relatively small, the methodology estimates both (1) "cluster-robust" and (2) "robust, unclustered" standard errors (Hanson 1978; Wolter 1985). The team reports the larger of the two standard error estimates and uses this larger estimate for significance testing. Sections B.1.1 and B.2.1. (for Stage 1 and Stage 2, respectively) present the methodology for estimating impacts explaining the "cluster-robust" and "robust, unclustered" methods in detail. For each Stage, this appendix also describes the methodology for subgroup analyses, multiple comparison adjustments, and the covariates used in analysis.

B.1 Stage 1 Impact Methodology

B.1.1. Estimation Procedure

We begin our description of the approach with the general estimation model in Equation (1) and then follow with the detailed specification used in this report in Equation (3). The general estimation model under this approach is:

(1) $$y_{ij} - \hat{y}_{ij} = \beta_0 + \beta_1 T_{1ij} + \varepsilon_{ij},$$

where y_{ij} is an outcome measure for beneficiary *i* in site *j* (*j* = 1, 2, …, 10),
$\hat{y}_{ij}$ = the predicted outcome for beneficiary *i* in site *j*,
T_{1ij} = an indicator of whether beneficiary *i* in site *j* has been randomized into the T1 group (= 1 if so, = 0 if in C1 group),
β_0 = the model intercept,
β_1= the overall impact of the T1 treatment (versus the no treatment of the C1 group), and
ε_{ij} is an error term that is correlated within site and independent between sites:

$$cov\left(\varepsilon_{ij}, \varepsilon_{i'j'}\right) = \begin{cases} \varphi^2 | i = i', j = j' \\ \rho\varphi^2 | i \neq i', j = j' \\ 0 | j \neq j' \end{cases}.$$

The predicted outcome $\hat{y}_{ij}$ is calculated from a first-stage regression model (a "working model"):

(2) $y_{ij} = \alpha_0 + X_{ij}\tilde{\alpha}_1 + \mu_{ij}$,

where y_{ij} is defined as above,
X_{ij} = a vector of baseline characteristics or "covariates" (listed in Exhibit B-2) for individual *i* in site *j*,
α_0 = the model intercept,
$\tilde{\alpha}_1$ = a vector of coefficients, and
μ_{ij} is an i.i.d. distributed error term.

This first-stage regression is estimated on the C1 group only. The parameter estimates are then used to calculate the predicted outcome ($\hat{y}_{ij}$) for both T1 and C1 beneficiaries. Subtracting the predicted outcome from the actual outcome serves to remove the variation in the outcome that can be explained by the covariates. The residuals that are produced may then be analyzed to measure the impact of BOND (that is, being assigned to T1 rather than to C1), as in Equation (1).

Rather than directly analyzing the residuals, however, we add a step to reduce the size of the data. This data reduction accomplishes two purposes: (1) it greatly speeds the run time of the multiple comparisons adjustment and (2) it appropriately addresses the non-normal distributions of earnings and binary outcomes. To achieve this data reduction, we split each "site X assignment group" cell into 200 evenly sized random groups. For instance, the T1 group in the Alabama site is randomly split into 200 groups, and the C1 group in Alabama is also randomly split into 200 groups. This approach results in 4,000 random groups (10 sites × 2 assignment groups × 200 random groups). Within each random group, the average residual is computed, and the group's weight is the sum of the weights of its members. These average residuals are then used to calculate the impact estimate.[8]

This data reduction speeds our multiple comparisons procedure, which is based on resampling, because repeated computer processing of 4,000 observations is faster than repeated processing of roughly 970,000 observations. The data reduction also serves to address the non-normal distributions of the earnings outcome and binary outcomes. Given the non-normality of these outcomes, the residuals of individual beneficiaries violate normality. However, the central limit theorem ensures that the distribution of *average* residual is normal, even if the individual residuals are not normally distributed. This fact makes the data-reduction step appealing on statistical grounds.

Incorporating the data reduction into our approach results in the two following slightly different estimation models used in this report:

[8] This average residual is calculated using sampling weights, so that beneficiaries with higher sampling weights make a larger contribution to the average residual.

(3) $\bar{R}_{kaj} = \beta_0 + \beta_1 T_{1kaj} + \varepsilon_{kaj}$,

(4) $\bar{R}_{kaj} = \gamma_0 + \gamma_1 T_{1kaj} + \omega_j + \tau_{kaj}$,

where $\bar{R}_{kaj} = \frac{1}{\sum_{m=1}^{n_{kaj}} w_m} \sum_{m=1}^{n_{kaj}} w_m (y_m - \hat{y}_m)$, the weighted average residual over the n_{kaj} members of random group k within assignment group a (either T1 or C1) in site j,

w_m= the sampling weight of beneficiary m of the random group indexed by kaj,

T_{1kaj} = an indicator of whether the members of random group k within assignment group a in site j have been randomized into the T1 group (= 1 if so, = 0 if in C1 group),

β_0, γ_0 = weighted averages of site-specific intercepts,

β_1, γ_1 = weighted averages of site-specific impacts of the T1 treatment (versus the no treatment of the C1 group),

ε_{kaj} is an error term that is correlated within site and independent between sites:

$$cov\left(\varepsilon_{kaj}, \varepsilon_{k'a'j'}\right) = \begin{cases} \varphi^2 | k = k', a = a', j = j' \\ \rho\varphi^2 | k \neq k' or\ a \neq a', j = j', \\ 0 | j \neq j' \end{cases}$$

ω_j is a site-specific fixed effect for site j, and

τ_{kaj} is an error term that is independent within site and between sites:

$$cov\left(\tau_{kaj}, \tau_{k'a'j'}\right) = \begin{cases} \varphi^2 | k = k', a = a', j = j' \\ 0 | k \neq k' or\ a \neq a'\ or\ j \neq j' \end{cases}.$$

The evaluation team developed this variance stabilization method to address an issue that first arose during impact estimation for Stage 2. During the preparation of the *First- and Second-Year Snapshot Report for Stage 2* (Gubits et al. 2014), we observed widely varying standard error estimates for pairs of estimates for which we expected the standard errors to be similar. These estimates were calculated using a model similar to that used in the first two Stage 1 *Snapshot Reports* (Stapleton et al. 2013; Stapleton et al. 2014), one in which errors are correlated within site and independent across sites. Upon investigation of the issue, the evaluation team determined that the instability in standard error estimates was related to having a small number of sites—only 10. Our simulations showed that an analysis with 10 sites was vulnerable to unstable variance estimates when true cross-site variance in impacts is relatively small. To address this issue, the evaluation team developed a method in the spirit of Hanson (1978) and Wolter (1985) in which techniques were used to "stabilize" estimates of variance. Because Stage 1 was theoretically as vulnerable to unstable standard error estimates as Stage 2, the evaluation team decided to adopt this new method for both Stage 1 and Stage 2.

The new method uses the larger of two standard error estimates for hypothesis testing: (1) a standard error estimate from a model where errors are correlated within site and independent across sites (that is, an "unconditional" standard error that treats the sites as clusters, sometimes called the "cluster-robust" standard error) and (2) a standard error estimate from a model that includes site fixed effects but does not allow for correlation of errors within site (that is, a "conditional" standard error, sometimes called the "robust, unclustered" standard error.) These two standard errors are appropriate for different circumstances. The unconditional standard errors are designed to support inferences about what would

happen with a national implementation of the benefit offset. In contrast, the conditional standard errors are designed to support inferences about what would happen if the benefit offset were implemented throughout the 10 sites. Standard theoretical statistical analysis implies that the true unconditional standard errors are at least as large and usually (often considerably) larger than the conditional standard errors. This situation exists because unconditional inference requires us to extrapolate from the 10 sites to the rest of the nation. However, the estimated (not true) unconditional standard errors are noisy (unstable), because they use observed variation among a relatively small number of sites. In the new method, we stabilize the unconditional standard errors by replacing them with corresponding conditional standard errors whenever the unconditional standard error is smaller than the conditional standard error.[9]

The estimation of Equation (3) produces the estimates of the impact (β_1) and the unconditional standard error. The estimation of Equation (4) produces the estimate of the conditional standard error.

Exhibits in this report present impact estimates from the estimation of Equation (3) (i.e., the unconditional model) and the larger of the unconditional and conditional standard errors. The larger standard error is used for hypothesis testing. The p-value for the t-statistic implied by the impact estimate and the reported standard error is calculated using 9 degrees of freedom, regardless of whether the reported standard error is the conditional or unconditional standard error.[10]

The estimation of Equations (3) and (4) both incorporate the weights of the random groups, to produce nationally representative results. We estimate both equations using the PROC SURVEYREG procedure in the SAS software package.[11] Equation (3) is estimated using the site variable in the CLUSTER statement. Equation (4) is estimated using the site variable in the STRATUM statement and including site dummy variables.

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[9] Our simulations have shown that the likelihood of the conditional standard error being larger than the unconditional standard error increases as the true cross-site variance of impacts decreases. In a simulation of very small true cross-site variance of impacts, we found a Type I error rate of only 0.017 when using $\alpha = 0.05$. This result shows that when true cross-site variance is relatively small (and so occasionally the conditional standard error is larger than the unconditional standard error), the variance stabilization method is conservative, sacrificing some statistical power to avoid displaying grossly inconsistent variance estimates for pairs of statistics where generally similar variances are expected.

[10] It is the national representativeness of the impact results that leads to the use of 9 degrees of freedom in the t-tests. Results that only generalize to the 10 BOND sites would use a number of degrees of freedom based on the number of study subjects in the impact comparison, rather than the number of study sites.

[11] We note that the estimated standard errors for the intervention impact produced by the PROC SURVEYREG procedure do not take into account uncertainty in the estimates of the $\tilde{\alpha}_1$ parameters in Equation (2). This factor has the potential to bias the estimates of standard errors downward, but we estimated the bias was very small (less than 1 percent), primarily because of the large sample sizes in BOND. Prior to running the final specifications at SSA, we estimated the standard error for the impact on SSDI benefits using an alternative jackknife estimator that captured the uncertainty in the estimates of the $\tilde{\alpha}_1$ parameters in Equation (2). We found the downward bias was too small to measure. For example, in one of our benefit equations, we estimated that the jackknife procedure reduced the standard error by \$0.03, which was less than one percent of the standard error without the correction. This evidence, in addition to the additional run time that would result from the use of the jackknife estimator in conjunction with our multiple comparisons procedure, led us to the decision not to use the jackknife estimator for impact estimation for all estimates.

B.1.2. Subgroup Analyses

This *Final Evaluation Report* discusses subgroup analysis of impacts on administrative outcomes in Chapter 5 and presents results in Appendix F. The Stage 1 subgroup analysis is conducted for the full set of subgroups listed in the 2011 *Evaluation Analysis Plan* (Bell et al. 2011). These are:

• Short-duration beneficiaries (those receiving benefits 36 months or less when entering BOND)	Vs.	• Longer-duration beneficiaries (those receiving benefits 37 months or more when entering BOND)
• Beneficiaries who only receive SSDI benefits at baseline	Vs.	• Beneficiaries who concurrently receive SSDI and SSI benefits at baseline
• Beneficiaries who have employment in 2010	Vs.	• Beneficiaries who have no employment in 2010
• Beneficiaries with access to Medicaid buy-in programs	Vs.	• Beneficiaries without access to Medicaid buy-in programs
• Younger beneficiaries (less than age 55)	Vs.	• Older beneficiaries (age 55 and older)
• Beneficiaries with primary impairment of major affective disorder	Vs.	• Beneficiaries with all other primary impairments
• Beneficiaries with primary impairment of back disorder	Vs.	• Beneficiaries with all other primary impairments

The impacts for each subgroup are estimated separately with the same estimation procedure as that used for the full sample. Specifically, as described in Section B.1.1., we estimate a working model in the full sample control group and calculate residuals for both treatment and control subjects based on the control group regression coefficients. Then, within each subgroup separately, we form random groups and regress average group residuals on treatment status.

Additionally, we test for difference in impacts between subgroups. We estimate the variance of the difference in subgroup impacts in two ways and use the larger standard error for statistical testing. In both ways, the weighted average residuals from the random groups formed in the two subgroups are regressed on an indicator for treatment status, an indicator for subgroup membership, and an interaction term between treatment status and subgroup membership, as shown in the following estimation models:

(5) $$\bar{R}_{kaj} = \beta_0 + \beta_1 T_{1kaj} + \beta_2 S_{kaj} + \beta_3 (T_{1kaj} S_{kaj}) + \varepsilon_{kaj},$$

(6) $$\bar{R}_{kaj} = \gamma_0 + \gamma_1 T_{1kaj} + \gamma_2 S_{kaj} + \gamma_3 (T_{1kaj} S_{kaj}) + \omega_j + \tau_{kaj},$$

where

S_{kaj} = 1 or 0 depending in which of two possible subgroups random group k in assignment group a in site j belongs to,

β_2, γ_2 = the difference between the two subgroups' expected outcomes in the absence of treatment,

β_3, γ_3 = the difference between the two subgroups in the impacts of the T1 treatment,

and all other terms are defined as in Section B.1.1.

In Equation (5), sites are treated as strata (the "conditional" analysis). In Equation (6), sites are treated as randomly selected clusters (the "unconditional" analysis). The p-value for the test that the difference in impacts between subgroups is equal to 0 is calculated using the estimated difference from the unconditional analysis (i.e., γ_3) and the larger of the two variance estimates (i.e., the larger of the standard error for β_3 and the standard error for γ_3). This is done in order to reduce the number of false positives created by noisy estimates of the unconditional variances (see Section B.1.1. above). The analyses use the PROC SURVEYREG procedure in the SAS software package.

B.1.3. Multiple Comparisons

Because the BOND impact analysis includes a large number of outcomes and analyzes numerous subgroups, it involves running a large number of hypothesis tests. The probability of finding false positives—that is, of finding statistically significant impacts for some outcomes when in fact the true impact is zero—rises with thenumber of hypothesis tests performed. Given the large number of hypothesis tests conducted in BOND, it is very likely the analysis will detect one or more such false positives. This risk is called the "multiple comparisons problem."

The impact analysis takes two steps to address the multiple comparisons problem in the BOND impact analysis. First, prior to the impact analysis, the hypothesis tests are separated into "confirmatory" and "exploratory" tests, as specified in Bell et al. (2011). Only the two most important outcomes from the evaluation—total earnings and total SSDI benefits—are included in the confirmatory group. All other impact estimates, including all estimates for subgroups, are considered exploratory. Statistically significant findings from confirmatory analyses are interpreted as evidence that the benefit offset had impacts on these outcomes, without cause for concern that they reflect the multiple comparisons problem. In contrast, statistically significant findings from exploratory analyses that do not adjust for multiple comparisons are characterized as suggestive of what BOND can accomplish, but might simply reflect the fact that a few impact estimates are bound to be significant when impacts on a large number of outcomes are tested, even if there is no impact on any outcome.

Second, we implement a multiple comparisons adjustment procedure for the two confirmatory outcomes in Stage 1. The procedure accounts for a "family-wise error rate," which represents the probability of rejecting at least one null hypothesis in a family of hypothesis tests when all null hypotheses are true.

For our Stage 1 set of confirmatory tests (tests of the statistical significance of impact estimates for total earnings and total SSDI benefits), the family-wise error rate is defined as the probability of finding a significant impact on either total earnings or total SSDI benefits when the true impact on both outcomes is zero. We employ a method from Westfall and Young (1993) and Westfall et al. (2011) called the permutation stepdown method. In conjunction with the estimation procedure described in B.1.1, the permutation stepdown method involves reassigning the 4,000 random groups to T1 or C1 many times (20,000) and recalculating impacts on earnings and SSDI benefits each time. In a large-scale simulation of the permutation step-down method using our estimation procedure, we found that this method rejected

null hypotheses at the expected family-wise error rate (that is, this method provided the desired protection against false positives).

The permutation step-down method produces adjusted *p*-values for the impacts on total earnings and total SSDI benefits. We describe the method below:

In notation, let

A, B = two impact estimates of interest (in this case, the estimated impact on earnings and the estimated impact on SSDI benefits).

p_A^{raw}, p_B^{raw} = *p*-values from individual t-tests of impact estimates based on the variance-stabilized standard error calculation (applying the larger of either the standard error assuming an unconditional error term or the conditional standard error to the impact estimate from the unconditional model). These are the "raw," unadjusted *p*-values for the impact estimates.

We can then place the impact estimates in the order of their raw *p*-values.

IMPACT1, IMPACT2 = the impact estimates in order of their raw *p*-values. IMPACT1 is the impact estimate with the smaller raw *p*-value, and IMPACT2 is the impact estimate with the larger raw *p*-value.

$p_{IMPACT1}^{raw}, p_{IMPACT2}^{raw}$ = raw *p*-values in order from smallest to largest.

We then form some large number *R* permutation replicates. (The procedures used for this report use 20,000 replicates.) With each replicate sample, we run impact regressions for the two outcomes, producing two *p*-values. Within each replicate sample, the t-test employs the same type of standard error—unconditional or conditional—as selected by the variance stabilization procedure for the full sample. For example, suppose that in the full Stage 1 sample, the unconditional standard error for the earnings impact is larger than the conditional standard error, while the conditional standard error is larger for the SSDI benefits impact. Then, in each replicate, the p-value for the earnings impact needs to be derived from the unconditional standard error and the p-value for the benefit impact needs to be derived from the conditional standard error.[12]

We can then define the adjusted *p*-values as follows:

$$p_{IMPACT1}^{adj} = \frac{Number\ of\ replicates\ where\ \min\{p_{IMPACT1}^{rep}, p_{IMPACT2}^{rep}\} < p_{IMPACT1}^{raw}}{R},$$

$$p_{IMPACT2}^{adj} = \max\left\{p_{IMPACT1}^{adj}, \frac{Number\ of\ replicates\ where\ p_{IMPACT2}^{rep} < p_{IMPACT2}^{raw}}{R}\right\},$$

where p_{IMPACT}^{rep} is the *p*-value for an impact in a particular replicate.

[12] Our simulations show that this refinement controls the family-wise error rate at the expected level.

The *p*-values used to determine statistical significance in this report for the confirmatory outcomes of annual earnings and annual SSDI benefits are the adjusted *p*-values calculated using this permutation step-down procedure.

Exhibit B-1 shows both unadjusted and adjusted p-values for the Stage 1 confirmatory impact estimates in this report.

Exhibit B-1. Stage 1 Impact Estimates on Confirmatory Outcomes Illustrating the Multiple Comparison Adjustment on *p*-values

Comparison	Confirmatory Outcome	Impact Estimate (1)	*p*-value (Unadjusted) (2)	*p*-value (Multiple Comparisons Adjustment) (3)
First Multiple Comparison Procedure (4 hypothesis tests)				
T1 vs. C1	Total earnings (January 2011–December 2015)	$9 ($92)	0.922	0.927
T1 vs. C1	Total SSDI benefits due (January 2011–December 2015)	$665### ($85)	0.000	0.000

Source: SSA administrative records from the MEF and MBR.

Notes: Benefit outcomes are based on benefits due for the 2011-2015 period, corrected for retroactive adjustments made through May 2017 date (Appendix A). All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

###/### Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a confirmatory standard of evidence (*p*-value adjusted by the multiple comparisons procedure) and a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites).

B.1.4. Covariates

Exhibit B-2 lists the covariates included in the estimation of Equation (2) in Section B.1.2. This list of covariates is identical to that used in previous Stage 1 impact analyses.

Exhibit B-2. Covariates Included in Stage 1 Impact Regressions

Covariates (measured at baseline unless otherwise specified)
Age
Age (squared)
AIME (Average Indexed Monthly Earnings) as of May 2011
AIME as of May 2011 (squared)
AIME as of May 2011 are equal to zero
Any employment in 2010 (the year prior to random assignment year)[a]
County 2010 employment rate for people with a disability
County April 2011 unemployment rate
Dummy for missing 2010 unemployment rate and missing rural status
Dummy for missing employment rate for people with a disability
Earnings in 2010 (the year prior to Random Assignment year)[a]
Sex
Has a representative payee
Has auxiliary beneficiary (AUX) who *is not* a DAC or DWB

Covariates (measured at baseline unless otherwise specified)
Has SSDI start date on or after January 1, 2010 (very short-duration beneficiary)
Ineligible for Stage 2 for geographical reasons
Ineligible for Stage 2 for having a legal guardian who was not a representative payee
Interaction of very short-duration x 2010 earnings[a]
Interaction of monthly benefit amount at baseline and AIME as of May 2011
Interaction of age and number of years receiving SSDI
Is a disabled adult child (DAC) beneficiary
Is a disabled widow(er) beneficiary (DWB)
Is a dually entitled DAC beneficiary
Is a dually entitled DWB
Monthly benefit amount (MBA) at baseline
MBA at baseline is equal to zero
Number of years receiving SSDI
Number of years receiving SSDI (squared)
Primary impairment category: Neoplasms Mental disorders Back or other musculoskeletal Nervous system disorders Circulatory system disorders Genitourinary system disorders Injuries Respiratory Severe visual impairments Digestive system Other impairments Unknown impairments
Receives written beneficiary notices in Spanish
Rural area dummy
Short-duration SSDI receipt (36 months or fewer)
SSI receipt dummy

[a] Included in model for all earnings outcomes and total SSDI benefits only.

B.1.5. Stage 1 Contamination Adjustment

As shown in Exhibit 1-3, the final Stage 1 analysis sample includes a total of 968,530 subjects, spread across T1 (77,101 subjects) and C1 (891,429 subjects). The final sample excludes subjects who died just prior to random assignment, but whose deaths were not identified in administrative records until later. These cases accounted for less than 1 percent of the overall sample. We also have excluded pairs of related beneficiaries served by the same area office at baseline if both members of the pair were not assigned to the same assignment group (T1 or C1). A large majority of excluded cases were primary worker beneficiaries assigned to one group with a DAC assigned to the other group.[13] The number

[13] Besides primary worker and DAC pairs, other related beneficiary pairs in the data were DAC/DWB and DAC/DAC pairs who were receiving benefits based on the work history of a common primary beneficiary. We excluded pairs where subjects were assigned to a different random assignment groups in Stage 1 or Stage 2 (e.g., C1 and T21 or T1 and Stage 2 recruitment pool). We also found and excluded all beneficiaries who were members of trios and larger family clusters served by the same area office at baseline, regardless of whether they were assigned to the same group or not.

excluded in this manner was less than 4 percent of all T1 and C1 subjects. We removed these cases because the behavior of one subject might be influenced directly or indirectly by the fact that different benefit-adjustment rules apply to the earnings of the other subject; to use the language of experimental evaluations, the behavior of both subjects is potentially contaminated by the assignment of the other to a different group. Under a national benefit offset, the same benefit adjustment rules would presumably apply to the earnings of all disabled beneficiaries entitled to benefits via a common primary beneficiary, just as they do under current law today.[14] If members of a pair served by the same area office at baseline were both assigned to the same group (either T1 or C1), they were not excluded from the sample. The weights are adjusted to ensure that both the T1 and C1 analysis samples are representative of all those in the national beneficiary population who met BOND eligibility criteria in the month of random assignment.[15]

B.1.6. Stage 1 Administrative Weights

This section describes the analysis weights used for administrative outcomes ("administrative weights").

The administrative weights reflect the probabilities of selection into the T1 and C1 groups. Initially, 10 SSA area offices were randomly selected as BOND sites. Next, BOND-eligible subjects were randomly selected for T1 and the C1-core. (The C1-core is a group of Stage 1 control subjects that is the same size as the T1 group—about 80,000 subjects—and selected in an identical manner.) Subjects who were not selected into T1 or the C1-core and who *were not* eligible for Stage 2 outreach (about 200,000 subjects) were placed in the C1 group as part of the C1-supplement. Of the roughly 800,000 subjects who were not selected into T1 or the C1-core and who *were* eligible for Stage 2 outreach, about 200,000 were randomly selected into Stage 2 outreach waves and the remaining 600,000 were placed in the C1 group, also as part of the C1-supplement. About 9,000 subjects were removed from Stage 1 as part of the "contamination" adjustment.

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[14] Although concerns about contamination primarily stem from how assignment of a pair to different groups might affect the behavior of both members of the pair, there is a secondary consideration related to how changes in the earnings of the primary beneficiary might affect the benefits of the DAC. The benefit offset was designed so that increases in the earnings of a primary disabled worker would have no negative effect on the benefits of auxiliary beneficiaries, including DAC, unless the primary earns so much that the primary benefit is zero, in which case all auxiliary benefits are suspended. However, an increase in the earnings of a primary beneficiary might result in an increase in the benefits of a DAC—if the earnings increase is sufficient to increase the Primary Insurance Amount (PIA) of the primary disabled worker.

[15] There is one minor exception to this statement. Groups of three or more BOND subjects served by the same area office at baseline who receive benefits under a single primary beneficiary's record (for example, a primary disabled worker with two DACs) are not represented. These beneficiaries represent 0.5 percent of the beneficiary population. The probability of all three family members being assigned to the T1 group was so low that after "contaminated" families were removed from the sample, there were not enough of these larger families left to analyze (in fact, only a single family of three members remained in T1). This single family of three represents about 1 percent of beneficiaries in these larger families originally assigned to T1. In contrast, about 72 percent of the beneficiaries in these larger families remained in C1 after "contaminated" families were removed from the sample. Given this discrepancy, and the very large weights it would have implied for the three T1 subjects, all of these larger families from T1 and C1 were removed from the analysis sample.

The first component of the analysis weight is the reciprocal of the probability of site selection. As explained in Stapleton et al. (2010), 10 SSA area offices were selected as sites for BOND from eight strata defined by census region (Northeast, Midwest, South, or West) and proportion of beneficiaries living in Medicaid buy-in states (low or high). A single area office was selected from each stratum, with one exception; three area offices were selected from the low Medicaid Buy-in stratum in the South region, which had many more area offices and beneficiaries than the other strata.[16] The area offices were selected in each stratum using probability proportional to size systematic sampling, in which size is defined as the number of SSDI beneficiaries served by the area office.

The second component of the administrative weights is the reciprocal of the probability of selection into T1 or C1 assignment groups conditional on selection of site. The weights are constructed differently for T1 and C1 subjects, reflecting the different processes for being randomly selected into T1 or C1. Subjects could only be selected into the T1 group during the initial random selection of T1 and C1-core. Subjects could be selected into C1 either through selection into the C1-core or through selection into the C1-supplement.

The random selection to the T1 or C1-core occurred within 20 strata (within BOND sites) defined by site and the distinction between short-duration receipt of SSDI benefits (36 months or fewer as of June 1, 2011) versus longer-duration receipt (37 months or more as of June 1, 2011). Short-duration beneficiaries were oversampled such that they made up 50 percent of the T1 group and the C1-core (rather than their naturally occurring proportion of about 30 percent).

The random selection of Stage-2 eligible subjects into each outreach wave occurred within strata defined by geographical zone and by the distinction between short- and long-duration receipt of SSDI *as of the mailing date* for the wave. (Initial outreach mailing began in January 2011 and ended in May 2012.) For logistical reasons, some outreach waves were limited to certain geographical zones within sites. Most waves oversampled short-duration subjects in order to insure that at least half of Stage 2 volunteers were short-duration subjects (a goal of the Stage 2 design). The degree of oversampling differed across waves. Stage 2 eligibility for the first three outreach waves (known as the Stage 2 "pilot") was based on the December 2010 sample file and eligibility for the remaining outreach waves was based on the subsequent April 2011 sample file.[17] Probability for random selection to Stage 2 outreach thus differed according to three factors:

a) SSDI benefit receipt start month (which determined short-/long-duration status for each outreach wave),
b) Geographical zone of residence, and
c) Stage 2 eligibility status in the December 2010 and April 2011 files.

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[16] Because three area offices were selected from this stratum, the first component of all administrative weights for sample members from this stratum is $\left(\frac{N_m}{3N_{mk}}\right)$, rather than $\left(\frac{N_m}{N_{mk}}\right)$.

[17] Volunteers from the pilot outreach waves are included in the Stage 2 sample for impact analysis.

Below, we specify weights (prior to post-stratification) separately for (1) T1 subjects who are unrelated to other BOND subjects within site, (2) C1 subjects who are unrelated to other BOND subjects within site, and (3) Stage 1 subjects who are related to another subject in the same site and assignment group. Each Stage 1 sample member who is unrelated to other BOND subjects in their site is assigned an analysis weight given by:

T1 subjects who are unrelated to other BOND subjects within site

$$w_{mkji}^{T1} = \left(\frac{N_m}{N_{mk}}\right)\left(\frac{N_{mkj}}{N_{mkj}^{T1}}\right)$$

where:

- w_{mkji}^{T1} is the Stage 1 analysis weight for a subject *i* who is served by site *k* within national stratum *m*, is a beneficiary of type *j* (short- or long-duration as of June 1, 2011), and has been randomly assigned to T1,
- N_m denotes the number of SSDI beneficiaries in national stratum *m* (*m*= 1, …, 8),
- N_{mk} denotes the number of SSDI beneficiaries served by site *k* within national stratum *m*,
- N_{mkj} denotes the number of BOND-eligible SSDI beneficiaries served by site *k* within national stratum *m* who are of type *j*,
- N_{mkj}^{T1} denotes the number of SSDI beneficiaries of type *j* in site *k* within national stratum *m* who were randomly assigned to T1.

C1 subjects who are unrelated to other BOND subjects within site

$$w_{mkj\ell i}^{C1} = \left(\frac{N_m}{N_{mk}}\right)\left(\frac{1}{Pr(selected\ to\ C1)^{mkj\ell}}\right)$$

$$Pr(selected\ to\ C1)^{mkj\ell} = Pr(selected\ to\ C1core)^{mkj} + Pr(selected\ to\ C1supplement)^{mkj\ell}$$

$$Pr(selected\ to\ C1core)^{mkj} = \left(\frac{N_{mkj}^{C1core}}{N_{mkj}}\right)$$

$$Pr(selected\ to\ C1supplement)^{mkj\ell} = Pr(not\ in\ core)^{mkj} Pr(not\ in\ outreach|not\ in\ core)^{mkj\ell}$$

$$Pr(not\ in\ core)^{mkj} = \left(1 - Pr(selected\ to\ T1)^{mkj} - Pr(selected\ to\ C1core)^{mkj}\right)$$

$$Pr(not\ in\ outreach|not\ in\ core)^{mkj\ell} = 1 - Pr(in\ outreach|not\ in\ core)^{mkj\ell}$$

where:

- N_m, N_{mk}, and N_{mkj} are defined as above,

- $w^{C1}_{mkj\ell i}$ is the Stage 1 analysis weight for a subject *i* who is served by site *k* within national stratum *m*, is a beneficiary of type *j* (short- or long-duration as of June 1, 2011), and of stratum ℓ (defined by SSDI receipt start month, geographical zone, and Stage 2 eligibility status in December 2010 and April 2011 files), and has been randomly assigned to C1,
- $Pr(selected\ to\ C1)^{mkj\ell}$ is the unconditional probability of being randomly selected to C1 for subjects in site *k* within national stratum *m* who are of type *j* and stratum ℓ,
- $Pr(selected\ to\ C1core)^{mkj}$ is the unconditional probability of being randomly selected to the C1-core for subjects in site *k* within national stratum *m* who are of type *j* (note that this is defined in the same manner as the probability of selection to T1) ,
- $Pr(selected\ to\ C1supplement)^{mkj\ell}$ is the unconditional probability of being randomly selected to the C1-supplement for subjects in site *k* within national stratum *m* who are of type *j* and stratum ℓ,
- $Pr(not\ in\ outreach|not\ in\ core)^{mkj\ell}$ is the conditional probability of *not* being randomly selected to Stage 2 outreach conditional on not being randomly selected to T1 or C1-core for subjects in site *k* within national stratum *m* who are of type *j* and stratum ℓ,
- $Pr(selected\ to\ T1)^{mkj}$ is the unconditional probability of being randomly selected to T1 for subjects in site *k* within national stratum *m* who are of type *j* –the reciprocal of the within-site component of w^{T1}_{mkji} (defined above),
- $Pr(in\ outreach|not\ in\ core)^{mkj\ell}$ is the conditional probability of being randomly selected to Stage 2 outreach conditional on not being randomly selected to T1 or C1-core for subjects in site *k* within national stratum *m* who are of type *j* and stratum ℓ.

Because of the large number of cells involved, direct estimation through sample counts of $Pr(in\ outreach|not\ in\ core)^{mkj\ell}$ would produce noisy estimates of probabilities. Therefore, we estimate these conditional probabilities with site-level logistic regression models of the form:

$$\log\left(\frac{\pi}{1-\pi}\right) = \beta_0 + \boldsymbol{\beta_1 SSDIStartMonthCohort} + \boldsymbol{\beta_2 GeographicalZone} + \boldsymbol{\beta_3 Stage2Eligibility} + \boldsymbol{\beta_4}(\boldsymbol{SSDIStartMonthCohort}\ X\ \boldsymbol{GeographicalZone}) + \varepsilon$$

where:

- π is the unknown probability of being randomly selected into outreach,
- $\boldsymbol{\beta_1}$, $\boldsymbol{\beta_2}$, $\boldsymbol{\beta_3}$, and $\boldsymbol{\beta_4}$ are vectors of coefficients,
- $\boldsymbol{SSDIStartMonthCohort}$ is a set of dummy variables indicating the SSDI entitlement start month cohort,[18]

[18] ***SSDIStartMonthCohort*** is a set of dummy variables representing 20 levels: January 2008 and before, each month from February 2008 to May 2009, May 2008 and before, June 2008 and after, and June 2009 and after. The number of pertinent levels for each subject within the ***SSDIStartMonthCohort*** set is determined by the

- ***GeographicalZone*** is a set of 3, 4, or 5 dummy variables depending on the site indicating geographical zone within site,[19]
- ***Stage2Eligibility*** is a set of 3 dummy variables: "eligible in both sample files", "eligible in December 2010 file only", and "eligible in April file only".

The value of $Pr(in\ outreach|not\ in\ core)^{mkj\ell}$ is 0.0 for subjects who were not eligible for Stage 2 in either sample file.

Stage 1 subjects who are related to another subject in the same site and assignment group

In essence, the above expressions for T1 and C1 weights are the product of a site weight and a within-site weight. Using this terminology, we can define the analysis weight of Stage 1 sample members who are related to another subject in the same assignment group as the product of the common site weight and the within site weights of each of the related sample members. In notation, this is:

$$w^{g}_{mkj\ell i} = \left(\frac{N_m}{N_{mk}}\right)\left(\frac{1}{Pr(selected\ to\ g)^{mkj\ell}_{i}}\right)\left(\frac{1}{Pr(selected\ to\ g)^{mkj\ell}_{r}}\right)$$

where:

- N_m and N_{mk} are defined as above,
- $w^{g}_{mkj\ell i}$ is the Stage 1 analysis weight for a subject *i* who is served by site *k* within national stratum *m*, is a beneficiary of type *j* (short- or long-duration as of June 1, 2011), and of stratum ℓ (defined by SSDI receipt start month, geographical zone, and Stage 2 eligibility status in December 2010 and April 2011 files), and has been randomly assigned to group *g* (T1 or C1),
- $Pr(selected\ to\ g)^{mkj\ell}_{i}$ is the unconditional probability of being randomly selected to either T1 or C1 (defined above), with subscript *i* added to emphasize that this is the type *j* and stratum ℓ of beneficiary *i*,

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number of outreach waves a subject could have been selected into based on their Stage 2 eligibility in the two sample files. Subjects with different values for the ***SSDIStartMonthCohort*** set had different probabilities of selection into outreach because their short-/long-duration status differed in the random selection of at least one outreach wave. For subjects who were eligible for Stage 2 in both sample files, the ***SSDIStartMonthCohort*** set has 18 pertinent levels: January 2008 and before, each month from February 2008 to May 2009, and June 2009 and after. For subjects who were eligible for Stage 2 only in the December 2010 sample file, the ***SSDIStartMonthCohort*** set has 6 pertinent levels: January 2008 and before, each month from February 2008 to May 2008, and June 2008 and after. For subjects who were eligible for Stage 2 only in the April 2011 sample file, the ***SSDIStartMonthCohort*** set has 14 pertinent levels: May 2008 and before, each month from June 2008 to May 2009, and June 2009 and after.

[19] The Greater Detroit and Greater Houston sites have 3 zones, the DC Metro site has 4 zones, and all other sites have 5 zones.

- $Pr(selected\ to\ g)_r^{mkj\ell}$ is the unconditional probability of being randomly selected to either T1 or C1 (defined above) for subjects with the type *j* and stratum ℓ of beneficiary *r*, who is the related family member of beneficiary *i*.

Note that related family members (beneficiary *i* and beneficiary *r*) who remain in the sample always are from the same stratum *m*, site *k*, and group *g* (otherwise they have been removed from the analysis sample). The related family members may differ only according to type *j* and stratum ℓ.

Post-stratification adjustments

The final steps of the construction of the administrative weights are two post-stratification adjustments to correct for chance imbalances in weights caused by the contamination adjustment (that is, caused by the exclusion of related subjects where the number of related subjects within the family unit served by the same area office is three or greater, the exclusion of pairs of related subjects served by the same area office where subjects are in different assignment groups ["contaminated"], and the special weighting needed for pairs of related subjects served by the same area office who are in the same assignment group ["uncontaminated"]).[20] The post-stratification adjustments use a universe of the final Stage 1 sample (including "uncontaminated" pairs of related subjects) plus "contaminated" pairs of related subjects. The Stage 1 weights of these subjects (including those in family pairs) are calculated as if none of the subjects were related (i.e., according to the definitions above for unrelated subjects). Then two sets of universe sums (also known as "control totals" in the statistics literature) are calculated:

1) The total weight of unrelated subjects and the total weight of subjects in family pairs, and
2) The total weight of subjects in each site.

The first post-stratification adjustment scales the post-contamination adjustment weights defined above so that, in both T1 and C1: 1) unrelated subjects have the same total weight as the unrelated subjects in the universe prior to the contamination adjustment, and 2) non-removed family pair subjects have the same total weight as all family pair subjects in the universe prior to the contamination adjustment.

The second post-stratification adjustment scales the weights after the first post-stratification adjustment so that, in both T1 and C1, subjects in a site have the same total weight as the universe subjects in that site. This insures that, in each site, the total weight of T1 subjects is equal to the total weight of C1 subjects.

B.1.7. Stage 1 Survey Weights

The construction of analysis weights for Stage 1 36-month survey outcomes is described in Hoffman et al. (2017), Appendix B.

B.2 Stage 2 Impact Methodology

This section describes Stage 2 methodology and includes estimation procedures, subgroup analysis, multiple comparisons adjustment, and covariates.

[20] Related subjects are defined as subjects in the same site who are entitled to SSDI benefits on the basis of the work history of a common primary beneficiary.

B.2.1. Estimation Procedure

For Stage 2, the basic impact estimation model is:

(7) $$y_{ij} = \beta_0 + \beta_1 T_{21ij} + \beta_2 T_{22ij} + X_{ij}\Phi + \varepsilon_{ij}$$

where

y_{ij} is an outcome measure for beneficiary *i* in site *j* (*j* = 1,2, …, 10),
T_{21ij} = an indicator of whether beneficiary *i* in site *j* has been randomized into the T21 group (= 1 if so, = 0 if in T22 or C2 groups),
T_{22ij} = an indicator of whether beneficiary *i* in site *j* has been randomized into the T22 group (= 1 if so, = 0 if in T21 or C2 groups),
X_{ij} = a vector of baseline characteristics (listed in Exhibits B-4 and B-5) for individual *i* in site *j*,
β_0 = the model intercept,
β_1 = the overall impact of the T21 treatment (vs. no treatment for the C2 group),
β_2 = the overall impact of the T22 treatment (vs. no treatment for the C2 group),
Φ = a vector of coefficients, and
ε_{ij} = an error term that is beneficiary- and site-specific (discussed below).

In this model, the incremental impact of the T22 treatment compared with the T21 treatment is the difference $\beta_2 - \beta_1$.We estimate model (7) by weighted least squares regression, using the SURVEYREG procedure in SAS and analysis weights described below in Section B.2.6.

The estimated standard errors are computed using a "variance stabilization" method, which errs on the side of a larger standard error when there is discrepancy between two different methods for estimating the standard error.[21] We first estimate the model while specifying that ε_{ij} is correlated within site and independent across sites (i.e., an "unconditional" standard error that treats the sites as clusters, sometimes called the "cluster-robust" standard error). Next, we estimate the model while specifying that ε_{ij} is independent between and within sites (i.e., a "conditional" standard error that treats the sites as strata, with sites entering into the model as dummy variables, sometimes called the "robust, unclustered" standard error).[22]

These two standard errors are appropriate for different purposes. The unconditional standard errors are designed to support inferences about what would happen with a national implementation of one treatment variation or another. In contrast, the conditional standard errors are designed to support inferences about what would happen if one treatment variation or another were implemented throughout the 10 sites. Standard theoretical statistical analysis implies that the *true* unconditional standard errors are at least as large and usually larger (often considerably) larger than the conditional standard errors. This is because unconditional inference requires us to extrapolate from the 10 sites to the rest of the nation. However, the *estimated* (not true) unconditional standard errors are noisy (unstable) due to the fact that they use

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[21] The specific method described here is in the spirit of Hanson (1978) and Wolter (1985), where other variance stabilization methods were used.

[22] When estimating the unconditional standard error, the covariates omit site dummies. When estimating the conditional standard error, the covariates include site dummies.

observed variation among a small number of sites—only 10. To address this issue due to the small number of sites, we stabilize the unconditional standard errors by replacing them with corresponding conditional standard errors whenever the unconditional standard error is smaller than the conditional standard error.[23] Both sets of standard errors are estimated using Taylor series linearization in the SURVEYREG procedure in SAS.

For both the unconditional and the conditional model, we compute estimated standard errors for the estimates of β_1, β_2, and $\beta_2 - \beta_1$ from the estimated variance-covariance matrix, using the ESTIMATE statement.

In all cases, the impact estimate we report is from the unconditional model. We report the standard error for each estimate that is the maximum of the conditional standard error and the unconditional standard error. The p-value for the t-statistic implied by the impact estimate and the reported standard error is calculated using 9 degrees of freedom, regardless of whether the reported standard error is the conditional or unconditional standard error.[24]

The computational method that we use for estimation of Stage 2 impacts is somewhat simpler than the method used for Stage 1 because Stage 2 has many fewer subjects (about 13,000 rather than close to 1 million in Stage 1). The smaller computational burden allows estimation of the model (7) in one step for Stage 2, whereas for Stage 1 the greater computational burden led us to use multiple steps.

B.2.2. Subgroup Analyses

The *Final Evaluation Report* presents impact estimates on administrative earnings and benefit outcomes for the full set of subgroups listed in the 2011 *Evaluation Analysis Plan* (Bell et al., 2011). These are:

• Short-duration beneficiaries (those receiving benefits 36 months or less when entering BOND)	Vs.	• Longer-duration beneficiaries (those receiving benefits 37 months or more when entering BOND)
• Beneficiaries who are working at baseline	Vs.	• Beneficiaries who are not working at baseline
• Beneficiaries with access to Medicaid buy-in programs	Vs.	• Beneficiaries without access to Medicaid buy-in programs

[23] Our simulations have shown that the likelihood of the conditional standard error being larger than the unconditional standard error increases as the true cross-site variance of impacts decreases. In a simulation of very small true cross-site variance of impacts, we found that the 90% confidence interval contained the true effect 92.3% of the time. This result shows that when true cross-site variance is relatively small (and so occasionally the conditional standard error is larger than the unconditional standard error), the variance stabilization method is conservative, sacrificing some statistical power to avoid displaying grossly inconsistent variance estimates for pairs of statistics where generally similar variances are expected. Given the statistical issues, such conservative inference seems appropriate.

[24] It is the national representativeness of the impact results that leads to the use of 9 degrees of freedom in the t-tests. Results that only generalize to the 10 BOND sites would use a number of degrees of freedom based on the number of study subjects in the impact comparison, rather than the number of study sites.

• Younger beneficiaries (less than age 55)	Vs.	• Older beneficiaries (age 55 and older)
• Beneficiaries with primary impairment of major affective disorder	Vs.	• Beneficiaries with all other primary impairments
• Beneficiaries with primary impairment of back disorder	Vs.	• Beneficiaries with all other primary impairments

We also examine an additional set of subgroups based on educational attainment, given the possibility of differential response to the offset due to (a) different earnings potential and (b) differing ability to understand the offset offer.

• Beneficiaries with any postsecondary degree	Vs.	• Beneficiaries with H.S. degree or less (includes those with postsecondary classes but no degree)

For each set of subgroups, we present four exhibits:

- T21 + T22 Vs. C2
- T21 Vs. C2
- T22 Vs. C2
- T22 Vs. T21

In addition to the three pairwise comparisons, we have added the comparison of T21 + T22 Vs. C2, which pools the two treatment groups together. We have added this comparison as a way to address the smaller sample size of some subgroups. Pooling the two treatment groups increases statistical power when looking for evidence of differential effects.

For subgroup analyses, we use the following extension of model (7):

$$(8) \qquad y_{ij} = \beta_0 + \beta_1 T_{21ij} + \beta_2 T_{22ij} + \beta_3 S_{ij} + \beta_4 (T_{21ij} S_{ij}) + \beta_5 (T_{22ij} S_{ij}) + X_{ij}\Phi + \varepsilon_{ij}$$

where

S_{ij} = 1 or 0 depending on which of two possible subgroups beneficiary *i* in site *j* belongs to,
β_1 = the impact of the T21 treatment (vs. no treatment for the C2 group) for the subgroup with S_{ij} = 0,
β_2 = the impact of the T22 treatment (vs. no treatment for the C2 group) for the subgroup with S_{ij} = 0,
β_3 = the difference between the two subgroups' expected outcomes in the absence of treatment,
β_4 = the difference between the two subgroups in the impact of the T21 treatment,
β_5 = the difference between the two subgroups in the impact of the T22 treatment,

and the rest of the notation is as defined above. In this model, for the subgroup with S_{ij} = 0, the impact of T21 vs. C2 is β_1, the impact of T22 vs. C2 is β_2, and the incremental impact of T22 vs. T21 is the difference $\beta_2 - \beta_1$. For the subgroup with S_{ij} = 1, the impact of T21 vs. C2 is $\beta_1 + \beta_4$, the impact of T22 vs. C2 is $\beta_2 + \beta_5$, and the incremental impact of T22 vs. T21 is $\beta_2 + \beta_5 - \beta_1 - \beta_4$. The difference between the two subgroups in the incremental impact of T22 vs. T21 is $\beta_5 - \beta_4$. Similar to the estimation of model (7), we use the SURVEYREG procedure in SAS to compute weighted least squares estimates of all model parameters. As we did for the estimation of model (7), we follow the variance stabilization method: for each hypothesis test we use the maximum of the unconditional standard error and the conditional standard error. Similar to the estimation of model (7), we use the ESTIMATE statement to obtain estimated standard errors for parameter estimates and their sums and differences.

B.2.3. Multiple Comparisons

The Stage 2 approach to the multiple comparisons problem is similar to the Stage 1 approach described in Section B.1.3.

1. We separate the hypothesis tests into "confirmatory" and "exploratory" tests, as specified in the *Evaluation Analysis Plan*, prior to conducting the impact analysis. Only two outcomes—total earnings from 2012 to 2015 and SSDI benefits from 2012 to 2015—are included in the confirmatory group, and only the impact estimates for those outcomes are treated as confirmatory. All other impact estimates, including all estimates for subgroups and impact findings concerning other outcomes, are considered exploratory. Statistically significant findings from confirmatory analyses are interpreted as evidence that the benefit offset had impacts on earnings or SSDI benefits. In contrast, statistically significant findings from exploratory analyses are characterized as suggestive of demonstration impacts in other areas.
2. We implement a multiple comparisons adjustment procedure for confirmatory tests. The procedure controls the "familywise error rate"—the probability of rejecting at least one null hypothesis in a family of hypothesis tests when all null hypotheses are true.

We handle the pairwise comparisons of T21 vs. C2 and T22 vs. C2 together in a multiple comparisons adjustment (total of four statistical tests). These two comparisons each compare a treatment group that has been offered the benefit offset against a control group that has not been offered the offset. This gives the benefit offset *two* chances to create the appearance of a statistically significant impact on key outcomes by chance alone. To control the overall risk of "false positives" in this sense, we adjust p-values from these two pairwise comparisons through a single procedure that keeps the overall probability of a false positive across four tests (T21 vs. C2 earnings, T21 vs. C2 SSDI benefits, T22 vs. C2 earnings, and T22 vs. C2 SSDI benefits) at or below the nominal significance level (.10, .05, or .01). In contrast, we view the EWIC vs. WIC (T22 vs. T21) comparison as a wholly different test of the effectiveness of enhanced work incentive services, rather than a further test of the benefit offset, so we handle this comparison separately from the other two. Thus, confirmatory analyses of the T22 vs. T21 comparison involve adjustment for only two tests (earnings and SSDI benefits), not four.

The Stage 2 method, like that for Stage 1, uses the Westfall–Young permutation stepdown method to control the familywise error rate. We describe the method below, starting with the example of adjusting for four tests.

In notation, let

- A, B, C, D = the four impact estimates of interest (in this case, impacts on earnings and SSDI benefits for the T21 vs. C2 and T22 vs. C2 comparisons), and
- $p_A^{raw}, p_B^{raw}, p_C^{raw}, p_D^{raw}$ = *p*-values from individual t-tests of impact estimates based on the variance-stabilized standard error calculation (applying the larger of either the standard error assuming an unconditional error term or the conditional standard error to the impact estimate from the unconditional model). These are the four "raw," unadjusted *p*-values for the impact estimates.

We can then place the impact estimates in the order of their raw *p*-values.

- IMPACT1, IMPACT2, IMPACT3, IMPACT4 = the impact estimates ordered by raw *p*-values, from lowest raw *p*-value (IMPACT1) to highest (IMPACT4).
- $p_{IMPACT1}^{raw}, p_{IMPACT2}^{raw}, p_{IMPACT3}^{raw}, p_{IMPACT4}^{raw}$ = raw p-values in order from smallest to largest.

We then form some large number R permutation replicates. (The procedures used for this report use 20,000 replicates.) With each replicate sample, we run impact regressions for the four impacts, producing four p-values.

We can then define the adjusted *p*-values as follows (Westfall et al. 2011):

$$p_{IMPACT1}^{adj} = \frac{Number\ of\ replicates\ where\ \min\{p_{IMPACT1}^{rep}, p_{IMPACT2}^{rep}, p_{IMPACT3}^{rep}, p_{IMPACT4}^{rep}\} \leq p_{IMPACT1}^{raw}}{R}$$

$$p_{IMPACT2}^{adj} = \max\left\{p_{IMPACT1}^{adj}, \frac{Number\ of\ replicates\ where\ \min\{p_{IMPACT2}^{rep}, p_{IMPACT3}^{rep}, p_{IMPACT4}^{rep}\} \leq p_{IMPACT2}^{raw}}{R}\right\}$$

$$p_{IMPACT3}^{adj} = \max\left\{p_{IMPACT2}^{adj}, \frac{Number\ of\ replicates\ where\ \min\{p_{IMPACT3}^{rep}, p_{IMPACT4}^{rep}\} \leq p_{IMPACT3}^{raw}}{R}\right\}$$

$$p_{IMPACT4}^{adj} = \max\left\{p_{IMPACT3}^{adj}, \frac{Number\ of\ replicates\ where\ p_{IMPACT4}^{rep} \leq p_{IMPACT4}^{raw}}{R}\right\}$$

where p_{IMPACT}^{rep} is the *p*-value for an impact in a particular replicate. The p-values from each replicate need to be defined such that they use the same standard error chosen for each particular impact estimate in the full Stage 2 sample. For example, suppose that in the full Stage 2 sample, the unconditional standard error for the earnings impact for the T21 versus C2 comparison is larger than the conditional standard error, while the conditional standard error is larger for the SSDI benefits impact for the T21 versus C2 comparison. Then, in each replicate, the p-value for the earnings impact for that comparison needs to be derived from the unconditional standard error and the p-value for the benefit impact needs to be derived from the conditional standard error.[25]

For the T22 vs. T21 comparison, the method is analogous, but there are only two *p*-values to adjust, with

[25] Our simulations show that this refinement controls the family-wise error rate at the expected level.

$$p^{adj}_{IMPACT1} = \frac{Number\ of\ replicates\ where\ \min\{p^{rep}_{IMPACT1}, p^{rep}_{IMPACT2}\} \leq p^{raw}_{IMPACT1}}{R}$$

$$p^{adj}_{IMPACT2} = \max\left\{p^{adj}_{IMPACT1}, \frac{Number\ of\ replicates\ where\ p^{rep}_{IMPACT2} \leq p^{raw}_{IMPACT2}}{R}\right\}$$

Our significance tests for confirmatory impact estimates compare the adjusted *p*-values with the thresholds of .10, .05, and .01.

Exhibit B-3 shows both unadjusted and adjusted p-values for the confirmatory impact estimates in this report.

Exhibit B-3. Stage 2 Impact Estimates on Confirmatory Outcomes Illustrating the Multiple Comparison Adjustment on *p*-values

Comparison	Confirmatory Outcome	Impact Estimate (1)	*p*-value (Unadjusted) (2)	*p*-value (Multiple Comparisons Adjustment) (3)
First Multiple Comparison Procedure (4 hypothesis tests)				
T21 vs. C2	Total earnings (January 2012–December 2015)	$1,499 ($660)	0.049	0.108
T21 vs. C2	Total SSDI benefits due (January 2012–December 2015)	$1,791## ($463)	0.004	0.020
T22 vs. C2	Total earnings (January 2012–December 2015)	$1,605 ($1,088)	0.174	0.194
T22 vs. C2	Total SSDI benefits due (January 2012–December 2015)	$1,997## ($529)	0.004	0.020
Second Multiple Comparison Procedure (2 hypothesis tests)				
T22 vs. T21	Total earnings (January 2012–December 2015)	$106 ($726)	0.887	0.939
T22 vs. T21	Total SSDI benefits due (January 2012–December 2015)	$207 ($614)	0.744	0.939

Source: SSA administrative records from the MEF and MBR and the Stage 2 Baseline Survey.

Notes: See Appendix A for further detail on outcomes. All earnings outcomes are based on a measure of earnings subject to Social Security taxes Weights are used to ensure that the BOND subjects who met analysis criteria are representative of volunteers for offset participation in the nation. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

#/##/### Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a confirmatory standard of evidence (p-value adjusted by the multiple comparisons procedure) and a two-tailed t-test with 9 degrees of freedom.

B.2.4. Covariates

Exhibits B-4 and B-5 show the covariates that we use in estimating Stage 2 impacts. Exhibit B-4 shows covariates derived from administrative data sources and Exhibit B-5 shows covariates derived from the Stage 2 Baseline Survey.

Exhibit B-4. Administrative-Data Covariates Included in Stage 2 Impact Regressions

Covariates (measured at baseline unless otherwise specified)
Age
Age (squared)
Any employment in 2010[a]
County 2010 employment rate for people with a disability
County April 2011 unemployment rate
Dummy for missing 2010 unemployment rate and missing rural status
Dummy for missing employment rate for people with a disability
Earnings in 2010[a]
Sex
Has a representative payee
Has SSDI start date on or after January 1, 2010 (very short-duration beneficiary)
Interaction of very short-duration x 2010 earnings[a]
Interaction of monthly benefit amount at baseline and AIME as of May 2011
Interaction of age and number of years receiving SSDI
Interaction of earnings in 2010 and randomly assigned in 2012[a]
Interaction of earnings in 2011 and randomly assigned in 2012[a]
Is a disabled adult child (DAC) beneficiary
Is a disabled widow(er) beneficiary (DWB)
Is a dually entitled DAC beneficiary
Is a dually entitled DWB
Monthly benefit amount (MBA) at baseline
Monthly benefit amount (MBA) at baseline is equal to zero
Number of years receiving SSDI
Number of years receiving SSDI (squared)
Primary impairment category: Neoplasms Mental disorders Back or other musculoskeletal Nervous system disorders Circulatory system disorders Genitourinary system disorders Injuries Respiratory Severe visual impairments Digestive system Other impairments Unknown impairments
Randomly assigned in 2012
Receives written beneficiary notices in Spanish
Rural area dummy
Short-duration SSDI receipt (36 months or fewer)
Site dummies[b]
SSI receipt dummy

[a] Included in model for all administrative earnings and benefit outcomes.

[b] Included in estimation of conditional standard error only. We do not include the site dummies when we are estimating the model with unconditional standard errors. The reason for the omission of site dummies in the unconditional (or, clustered) model is that fixed effects and random effects cannot be simultaneously identified.

Exhibit B-5. Baseline Survey Covariates Included in Stage 2 Impact Regressions

Covariates
Marital status (married, widowed, divorced, separated, never married)
Cohabiting dummy
Education dummies (Less than 5th grade or special education with no HS/GED, 5th-12th no HS/GED, HS/GED, 2 or 3 yr degree, 4yr college degree or higher)
Child under age 18 in household
Race/ethnicity (African American, Hispanic, White, Asian, Other)
Working at baseline (baseline survey)
Lives in non-group residence (single family home, regular apartment, or mobile home)
Enrolled in school or taking classes
Full-time student
Engaged in volunteer work
Health dummies (excellent, very good, good, fair, poor)
Personal goals include getting a job (if not working), moving up in a job, or learning new job skills
Health limits in moderate activities “a lot”
Health limits climbing several flights of stairs “a lot”
Emotional well-being (composite scale)
Stayed overnight in a hospital in 12 months before baseline
Needs the help of another to get around inside home
Needs the help of another to get around outside home
Earned $12,000 or more in year before baseline
Change in health during past year (much better, somewhat better, about the same, somewhat worse, or much worse)
Not in the labor force
Self-employed
Employed at a steady job (neither temporary nor seasonal)
Employed full-time (35 or more hours per week)
Employed at a job with health insurance benefits
Employed at a job with many benefits (health insurance, paid sick days and vacation, long- and short-term disability benefits, and retirement benefits)
Able to drive a car
Has access to a car, truck, or van
Perceived barriers to employment (composite scale)
Able to do the same type of work as was doing when first became limited in the kind or amount of work or other daily activities one could do
Stayed in hospital more than 30 days in year before baseline
Body mass index 25 or higher
Emotional problems limited activities most or all of the time
Interaction of employed full-time and rural area
Interaction of employed full-time and 4-year college degree
Interaction of employed full-time and engaged in volunteer work
Interactions of employed full-time and health dummies
Interaction of employed full-time and self-employed
Interaction of employed full-time and job with health insurance
Interaction of employed full-time and job with many benefits
Interaction of employed full-time and able to do the same type of work as was doing when first became activity-limited
Interaction of employed full-time and access to a car, truck, or van
Interactions of change in health and earned $12,000 or more in year before baseline
Interaction of not in the labor force and short-duration SSDI receipt
Interaction of not in the labor force and very short-duration beneficiary

Covariates
Interaction of not in the labor force and 2010 earnings[a]
Three-way interaction of not in the labor force, 2010 earnings, and very short-duration beneficiary[a]
Interaction of self-employed and county April 2011 unemployment rate
Interaction of self-employed and age
Interaction of self-employed and squared age
Interaction of self-employed and able to drive a car
Interactions of employed at a steady job and primary impairment category
Interaction of employed at a job with health insurance benefits and MBA at baseline
Interaction of employed at a job with health insurance benefits and very short-duration beneficiary
Interaction of employed at a job with health insurance benefits and 2010 earnings[a]
Three-way interaction of employed at a job with health insurance benefits, 2010 earnings, and very short-duration beneficiary[a]
Interaction of employed at a job with many benefits and county 2010 employment rate for people with a disability
Interaction of employed at a job with many benefits and dummy for missing employment rate for people with a disability
Interactions of employed at a job with many benefits and marital status
Interactions of employed at a job with many benefits and race/ethnicity
Interactions of employed at a job with many benefits and health dummies
Interaction of employed at a job with many benefits and health limits in moderate activities “a lot”
Interaction of perceived barriers to employment and earned $12,000 or more in year before baseline
Interactions of primary impairment category and able to do the same type of work as was doing when first became activity-limited
Interactions of MBA and able to do the same type of work as was doing when first became activity-limited

[a] Included in model for all administrative earnings and benefit outcomes.

B.2.5. Stage 2 Contamination Adjustment

The Stage 2 analysis sample in this Final Report does not include Stage 2 volunteers with relatives who are also in BOND.[26] The excluded subset is only a small fraction of the original Stage 2 sample.

The behavior of Stage 2 volunteers could be contaminated by the random assignments and behaviors of related subjects in the Stage 1 or Stage 2 experiments. Two related BOND subjects would end up in the same Stage 2 random assignment group only if *all* of the following three conditions were met:

1. In Stage 1, both subjects were randomly assigned to the Stage 2 solicitation pool.
2. Both subjects volunteered for Stage 2.
3. In Stage 2, both subjects were randomly assigned to the same group (T21, T22, or C2).

Since the probability of meeting all three conditions was low, Stage 2 volunteers who were related to other BOND subjects were very likely to be contaminated. Among the 12,954 Stage 2 volunteers, 210 were related to other BOND subjects, and only 6 of these 210 volunteers were uncontaminated (i.e., their

[26] As in Stage 1, we define a related pair of beneficiaries as two beneficiaries both eligible for BOND served by the same area office who received benefits based on the work history of a common primary beneficiary (who may or may not be one of the pair).

BOND relatives ended up in the same Stage 2 random assignment group).[27] None of these 6 uncontaminated volunteers were assigned to T22. While the 6 uncontaminated subjects could have been included in the T21 vs. C2 comparison, they would have had to be dropped in the T22 vs. C2 and T22 vs. T21 comparisons as there were no subjects with relatives to serve as their counterparts in T22. In addition, these 6 subjects would have had very large analysis weights (both administrative and survey non-response, where applicable) in the T21 vs. C2 comparison in order to represent the related BOND subjects who were contaminated. We therefore decided to exclude all of the 210 volunteers with BOND relatives. The resulting Stage 2 analysis sample has 12,744 subjects. The sample does not represent volunteers with BOND-eligible relatives, but the excluded subset is only a small fraction of the original Stage 2 sample (1.6 percent unweighted; 1.7 percent using the administrative weights from Section B.2.6).

B.2.6. Stage 2 Administrative Weights

There are two components of the Stage 2 administrative weight. The first component of the weight is necessary for impact estimates to be generalizable to the national population of Stage 2-eligible beneficiaries who would have volunteered for Stage 2 had they been asked. As explained in Stapleton et al. (2010), 10 SSA area offices were selected as sites for BOND from eight strata defined by census region (Northeast, Midwest, South, or West) and proportion of beneficiaries living in Medicaid buy-in states (low or high). With one exception, a single area office was selected from each stratum. The exception is that three area offices were selected from the low Medicaid Buy-in stratum in the South region, a region with many more area offices and beneficiaries than the other strata.[28] The area offices were selected in each stratum using probability proportional to size systematic sampling, in which size is defined as the number of SSDI beneficiaries served by the area office.

The second component of the weight is the within-site component. The random selection of Stage-2 eligible subjects into each outreach wave occurred in within-site strata defined by geographical zone and by the distinction between short- and long-duration SSDI benefit receipt *as of the mailing date* for the wave. (Initial outreach mailing began in January 2011 and ended in May 2012.) For logistical reasons, some outreach waves were limited to certain geographical zones within sites. Most waves oversampled short-duration subjects in order to ensure that at least half of Stage 2 volunteers were short-duration subjects (a goal of the Stage 2 design). The degree of oversampling differed across waves. Stage 2 eligibility for the first three outreach waves (known as the Stage 2 "pilot") was based on the December 2010 sample file and eligibility for the remaining outreach waves was based on the subsequent April 2011

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[27] Of the 210 beneficiaries related to other BOND subjects, 189 beneficiaries were related to one other BOND subject, 18 were related to two other BOND subjects, 2 were related to three other BOND subjects, and 1 was related to 4 other BOND subjects. Of the 6 subjects who were uncontaminated, two pairs of related subjects were assigned to T21 and one pair of related subjects was assigned to C2.

[28] Because three area offices were selected from this stratum, the first component of all administrative weights for sample members from this stratum is $\left(\frac{N_m}{3N_{mk}}\right)$, rather than $\left(\frac{N_m}{N_{mk}}\right)$.

(for most subjects) and June 2011 (for newly added subjects)[29] sample files. Probability for random selection to the Stage 2 outreach thus differed according to three factors:

a) SSDI receipt start month (which determined short-/long-duration status for each outreach wave),
b) Geographical zone of residence, and
c) Stage 2 eligibility status in December 2010, April 2011, and June 2011 files

There are four different possible Stage 2 eligibility statuses:

1 = beneficiary is Stage 2-eligible in December 2010 sample file only,

2 = beneficiary is Stage 2-eligible in December 2010 and April 2011 sample files,

3 = beneficiary is Stage 2-eligible in April 2011 sample file only, and

4 = beneficiary is Stage 2-eligible in June 2011 sample file of newly added subjects.

For administrative outcomes, each Stage 2 sample member is assigned an analysis weight given by:

$$w^{A}_{mkj\ell} = \left(\frac{N_m}{N_{mk}}\right)\left(\frac{1}{P_{mkj\ell}}\right)$$

where:

- $w^{A}_{mkj\ell}$ is the Stage 2 weight for administrative outcomes for a volunteer who is served by site k within site-selection stratum m and who is of longitudinal eligibility category j (one of the four Stage 2 eligibility statuses listed above) and within-site stratum ℓ (defined by SSDI entitlement start month and geographical zone);[30]
- N_m is the number of SSDI beneficiaries in site-selection stratum m (m= 1, …, 8);
- N_{mk} is the number of SSDI beneficiaries served by site k within site-selection stratum m;
- $P_{mkj\ell}$ is the unconditional probability of random selection to any one of the outreach waves of the Stage 2 recruitment effort for a volunteer of site-selection stratum m, site k, longitudinal

[29] To insure that there would be sufficient short-duration subjects in the outreach waves (and thereby meet the goal of having at least half the volunteers be of short-duration), very recently-entitled Stage 2–eligible subjects were added in June 2011 to the pool of subjects from which outreach waves were drawn.

[30] The number of possible within-site strata ℓ varies in the calculation of selection probabilities for different sets of outreach waves. For the pilot waves, there are 18 possible strata per site defined by SSDI entitlement start month (January 2008 and before, each month from February 2008 to May 2008, and June 2008 and after) and geographical zone (3 zones per site). For the June 2011 wave, there are 6 possible strata per site ({July 2008 and before, August 2008 and after} × {3 zones per site}). For the July 2011 wave, there are 6 possible strata per site ({August 2008 and before, September 2008 and after} × {3 zones per site}). For the August 2011 wave, there are up to 10 possible strata per site ({September 2008 and before, October 2008 and after} × {up to 5 zones per site}). And for the remaining waves, there are up to 45 possible strata per site ({October 2008 and before, each month from November 2008 to May 2009, and June 2009 and after} × {up to 5 zones per site}). The Greater Detroit and Greater Houston sites have 3 zones, the DC Metro site has 4 zones, and all other sites have 5 zones.

eligibility category *j*, and within-site stratum ℓ (i.e., the number of persons in *m, k, j, l* selected to any one of the outreach waves, divided by the total number of Stage 2-eligible SSDI beneficiaries in *m, k, j, l*).

The first component of the weight is included so that the Stage 2 results represent Stage 2-eligible beneficiaries in the nation who would have volunteered had they been offered the opportunity to enroll in the study. The second component of the weight is the reciprocal of the probability of being selected into any outreach wave.

The unconditional probabilities of selection into any outreach wave differ for the four longitudinal eligibility categories of beneficiaries, and are based on conditional probabilities for inclusion into five sets of outreach waves: (a) the pilot waves (January to April 2011), (b) the June 2011 wave, (c) the July 2011 wave, (d) the August 2011 wave, and (e) all other later waves from September 2011 through May 2012. Subjects of longitudinal eligibility category *j*=1 were only eligible to be selected into the pilot waves, those of category *j*=2 were eligible for all waves, those of category *j*=3 were eligible beginning with the June 2011 wave, and those of category *j*=4 were eligible beginning with the July 2011 wave. The conditional probabilities for inclusion into each of these sets of waves are:

$$Pr(PILOT)^{mk\ell} = \left(\frac{N_{mk\ell}^{PILOT}}{N_{mk1\ell} + N_{mk2\ell}}\right)$$

$$Pr(JUNEWAVE|not\ previously\ selected)^{mk\ell} = \left(\frac{N_{mk\ell}^{JUNEWAVE}}{N_{mk2\ell} + N_{mk3\ell} - N_{mk2\ell}^{PILOT}}\right)$$

$$Pr(JULYWAVE|not\ previously\ selected)^{mk\ell} = \left(\frac{N_{mk\ell}^{JULYWAVE}}{N_{mk2\ell} + N_{mk3\ell} + N_{mk4\ell} - N_{mk2\ell}^{PILOT} - N_{mk\ell}^{JUNEWAVE}}\right)$$

$$Pr(AUGWAVE|not\ previously\ selected)^{mk\ell} = \left(\frac{N_{mk\ell}^{AUGWAVE}}{N_{mk2\ell} + N_{mk3\ell} + N_{mk4\ell} - N_{mk2\ell}^{PILOT} - N_{mk\ell}^{JUNEWAVE} - N_{mk\ell}^{JULYWAVE}}\right)$$

$$Pr(LATERWAVES|not\ previously\ selected)^{mk\ell} = \left(\frac{N_{mk\ell}^{LATERWAVES}}{N_{mk2\ell} + N_{mk3\ell} + N_{mk4\ell} - N_{mk2\ell}^{PILOT} - N_{mk\ell}^{JUNEWAVE} - N_{mk\ell}^{JULYWAVE} - N_{mk\ell}^{AUGWAVE}}\right)$$

where:

- $Pr(\blacksquare)^{mk\ell}$ denotes the unconditional probability of being included in a particular set of outreach waves for a Stage 2 volunteer of site-selection stratum *m*, site *k*, and within-site stratum ℓ;
- $Pr(\blacksquare|not\ previously\ selected)^{mk\ell}$ denotes the conditional probability of being included in a particular set of outreach waves conditional on not having been selected for a previous wave for a Stage 2 volunteer of site-selection stratum *m*, site *k*, and within-site stratum ℓ;

- $N^{\blacksquare}_{mk\ell}$ denotes the number of subjects of national stratum *m*, site *k*, and within-site stratum ℓ (across all longitudinal eligibility categories *j*) who were selected into a particular set of outreach waves;
- $N_{mkj\ell}$ denotes the total number of Stage 2 eligible beneficiaries of site-selection stratum *m*, site *k*, longitudinal eligibility category *j*, and within-site stratum ℓ;
- $N^{\blacksquare}_{mkj\ell}$ denotes the number of subjects of site-selection stratum *m*, site *k*, longitudinal eligibility category *j*, and within-site stratum ℓ who were randomly selected into a particular set of outreach waves; and
- the number of possible within-site strata ℓ differs according to the probability calculated.

Using the conditional probabilities for inclusion into particular sets of outreach waves, we can then define the unconditional probabilities for inclusion into particular sets of waves for the subjects in longitudinal eligibility categories *j* = 2, 3, and 4.

Longitudinal Eligibility Category 2:

$$Pr(JUNEWAVE)^{mk2\ell} = \left(1 - Pr(PILOT)^{mk\ell}\right) Pr(JUNEWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(JULYWAVE)^{mk2\ell} = \left(1 - Pr(PILOT)^{mk\ell} - Pr(JUNEWAVE)^{mk2\ell}\right) Pr(JULYWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(AUGWAVE)^{mk2\ell} = \left(1 - Pr(PILOT)^{mk\ell} - Pr(JUNEWAVE)^{mk2\ell} - Pr(JULYWAVE)^{mk2\ell}\right) Pr(AUGWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(LATERWAVES)^{mk2\ell} = \left(1 - Pr(PILOT)^{mk\ell} - Pr(JUNEWAVE)^{mk2\ell} - Pr(JULYWAVE)^{mk2\ell} - Pr(AUGWAVE)^{mk2\ell}\right) Pr(LATERWAVES|not\ previously\ selected)^{mk\ell}$$

Longitudinal Eligibility Category 3:

$$Pr(JUNEWAVE)^{mk3\ell} = Pr(JUNEWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(JULYWAVE)^{mk3\ell} = \left(1 - Pr(JUNEWAVE)^{mk3\ell}\right) Pr(JULYWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(AUGWAVE)^{mk3\ell} = \left(1 - Pr(JUNEWAVE)^{mk3\ell} - Pr(JULYWAVE)^{mk3\ell}\right) Pr(AUGWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(LATERWAVES)^{mk3\ell} = \left(1 - Pr(JUNEWAVE)^{mk3\ell} - Pr(JULYWAVE)^{mk3\ell} - Pr(AUGWAVE)^{mk3\ell}\right) Pr(LATERWAVES|not\ previously\ selected)^{mk\ell}$$

Longitudinal Eligibility Category 4:

$$Pr(JULYWAVE)^{mk4\ell} = Pr(JULYWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(AUGWAVE)^{mk4\ell} = \left(1 - Pr(JULYWAVE)^{mk4\ell}\right) Pr(AUGWAVE|not\ previously\ selected)^{mk\ell}$$

$$Pr(LATERWAVES)^{mk4\ell} = \left(1 - Pr(JULYWAVE)^{mk4\ell} - Pr(AUGWAVE)^{mk4\ell}\right) Pr(LATERWAVES|not\ previously\ selected)^{mk\ell}$$

In the final step, using the unconditional probabilities for inclusion into particular sets of outreach waves, we can define the probability of inclusion into *any* outreach wave for the four categories of volunteers:

$$P_{mk1\ell} = Pr(PILOT)^{mk\ell}$$

$$P_{mk2\ell} = Pr(PILOT)^{mk\ell} + Pr(JUNEWAVE)^{mk2\ell} + Pr(JULYWAVE)^{mk2\ell} + Pr(AUGWAVE)^{mk2\ell} + Pr(LATERWAVES)^{mk2\ell}$$

$$P_{mk3\ell} = Pr(JUNEWAVE)^{mk3\ell} + Pr(JULYWAVE)^{mk3\ell} + Pr(AUGWAVE)^{mk3\ell} + Pr(LATERWAVES)^{mk3\ell}$$

$$P_{mk4\ell} = Pr(JULYWAVE)^{mk4\ell} + Pr(AUGWAVE)^{mk4\ell} + Pr(LATERWAVES)^{mk4\ell}$$

It is important to note that the Stage 2 administrative weights *do not* align the weighted totals of the Stage 2 volunteers to represent all beneficiaries in the outreach waves. Only a small percentage (5 percent) of all subjects who were solicited chose to volunteer for the study. The sum of the Stage 2 administrative weights across the three assignment groups of Stage 2 subjects is an estimate of the number of Stage 2-eligible beneficiaries in the nation who would have volunteered had they been given the opportunity to enroll in the study.

B.2.7. Stage 2 Survey Weights

For estimating impacts on survey outcomes, each Stage 2 sample member is assigned an analysis weight that is the Stage 2 administrative weight adjusted for non-response to the survey. The survey non-response adjustment weights more heavily the respondents who are most similar to the non-respondents. In order to construct the non-response adjustment component we ran three predictive regressions: one for each of the Stage 2 assignment groups. This model regresses an indicator variable equal to one if a person responded to the survey, on all baseline characteristics used in the impact model.

(3) $$R_{pkg} = X_{pkg}\Theta_g + \epsilon_{pkg}$$

where

R_{pkg} is equal to one if participant p in site k in assignment group g responded to the survey,
X_{pkg} = a vector of baseline characteristics[31] for individual p in site k in assignment group g,
Θ_g = a vector of coefficients for assignment group g, and
ϵ_{pkg} = an idiosyncratic error term for participant p, in site k, and assignment group g.

We use the coefficients from this predictive model to calculate each subject's propensity to respond to the survey given their baseline characteristics ($X_{pkg}\Theta_g$ from regression) . Then, we divide each assignment group into quintiles based on propensity to respond. The non-response adjustment component for each respondent is

$$nrw_{gq} = \frac{NR_{gq}+R_{gq}}{R_{gq}}$$

where:

- nrw_{gq} denotes the non-response weight component for a respondent in group g with response propensity quintile q.
- NR_{gq} denotes the *weighted* number of non-respondents in group g with response propensity quintile q where the weights are the analytical weights for administrative outcomes $w^A_{mkj\ell}$ (i.e., NR_{gq} is the sum of the administrative outcome weights for the non-respondents in group g with response propensity quintile q).
- R_{gq} denotes the *weighted* number of respondents in group g with response propensity quintile q where the weights are the analytical weights for administrative outcomes $w^A_{mkj\ell}$ (i.e., R_{gq} is the sum of the administrative outcome weights for the respondents in group g with response propensity quintile q).

The analytical weight for survey outcomes is then given by:

$$w^S_{mkj\ell gq} = w^A_{mkj\ell} \times nrw_{gq}$$

where:

- $w^S_{mkj\ell gq}$ denotes the Stage 2 weight for survey outcomes for a volunteer of national stratum m, site k, category j, and stratum ℓ, assignment group g, and response propensity quintile q.
- $w^A_{mkj\ell}$ is the administrative weight defined in Section B.2.6.

[31] The baseline characteristics use to predict response are site, sex, age, age squared, impairment category, and indicators for short duration, having a representative payee, having entitlement based on disabled adult child status, year of random assignment, being in the June refresh sample, marital status, education, living in group quarters, health status, health status change in past year, being overweight, hospitalization in past year, self-employed, having access to a car, and engaging in volunteer activity.

Exhibit B-6. Characteristics of T1 and C1 BOND Subjects at Random Assignment

Characteristic	T1 Mean	C1 Mean	Difference	p-Value
Number of Beneficiaries	***77,101***	***891,429***		
Gender (percent)				
Male	51.6	51.6	0.0	0.992
Female	48.4	48.4	0.0	
Age at Outreach Wave Creation (percent)				
20–29 years	6.5	6.4	0.1	0.848
30–39 years	13.2	13.1	0.1	
40–44 years	10.7	10.9	-0.2	
45–49 years	16.9	16.7	0.2	
50–54 years	23.4	23.6	-0.2	
55-59 years	29.3	29.3	0.0	
Mean age (years)	47.6	47.7	0.0	0.576
Primary Impairment (percent)				
Neoplasms	2.6	2.6	0.0	0.278
Mental Disorders	31.2	30.9	0.3	
Back or Other Musculoskeletal	22.8	23.2	-0.3	
Nervous System Disorders	7.2	7.3	-0.1	
Circulatory System Disorders	5.8	5.9	0.0	
Genitourinary System Disorders	1.8	1.8	0.0	
Injuries	4.3	4.2	0.1	
Respiratory	1.9	2.0	-0.1	
Severe Visual Impairments	1.9	2.0	-0.1	
Digestive system	1.6	1.5	0.1	
Other impairments	18.6	18.5	0.1	
Length of SSDI receipt				
Short duration (36 months or less)	30.2	30.1	0.1	0.321
Number of Months Received SSDI	100.8	100.7	0.1	0.724
Benefit Amount and Status				
Monthly SSDI Benefits ($)	997.0	995.8	1.2	0.733
SSDI Only	81.8	82.0	-0.2	0.424
Concurrent Beneficiary	18.2	18.0	0.2	
Disabled adult child (DAC)	12.9	12.7	0.2	0.592
Disabled widow beneficiary (DWB)	1.7	1.7	0.0	0.555
Dually-entitled disabled adult child	2.3	2.3	0.0	0.993
Dually-entitled disabled widow beneficiary	0.9	0.9	0.0	0.217
Payee is other than self	18.3	18.5	-0.2	0.507
Site				
Alabama	11.5	11.5	0.0	N/A
Arizona/Southeast California	11.5	11.5	0.0	
Colorado/Wyoming	5.8	5.8	0.0	
DC Metro	8.3	8.3	0.0	

Characteristic	T1 Mean	C1 Mean	Difference	p-Value
Greater Detroit	12.5	12.5	0.0	
Greater Houston	9.6	9.6	0.0	
Northern New England	3.9	3.9	0.0	
South Florida	11.4	11.4	0.0	
Western New York	15.3	15.3	0.0	
Wisconsin	10.2	10.2	0.0	
Omnibus statistical test	F-statistic =	1.3	p-value =	0.181

Source: SSA administrative records from the MBR..

Note: p-values shown are from statistical tests of differences in percentages between the T1 and C1 groups. Sets of mutually-exclusive characteristics were tested for differences with chi-squared tests. Single characteristics not part of a mutually-exclusive set were tested for differences by F-tests. The F-statistic shown at bottom is from an omnibus statistical test of difference between groups across all characteristics except site. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

Exhibit B-7. Characteristics of T21, T22, and C2 BOND Subjects at Random Assignment

Characteristic	Percent of All Stage 2 Volunteers	Percent of Volunteers in:			p-Value
		T21	T22	C2	
Number of Beneficiaries	***12,744***	***4,854***	***3,041***	***4,849***	
Gender (percent)					
Male	48.6	48.1	48.4	49.3	0.410
Female	51.4	51.9	51.6	50.7	
Age at Outreach Wave Creation (percent)					
20–29 years	4.9	4.6	4.6	5.4	0.784
30–39 years	13.9	14.4	13.8	13.4	
40–44 years	11.8	11.9	11.5	11.8	
45–49 years	16.7	16.7	17.4	16.3	
50–54 years	22.9	23.0	22.4	23.2	
55 years and over[a]	29.8	29.3	30.4	29.9	
Mean age (years)	48.0	47.9	48.2	48.0	0.568
Primary Impairment (percent)					
Neoplasms	3.5	3.4	3.7	3.5	0.859
Mental Disorders	33.9	35.0	32.9	33.6	
Back or Other Musculoskeletal	23.0	22.6	23.3	23.1	
Nervous System Disorders	6.9	6.4	6.6	7.5	
Circulatory System Disorders	6.0	5.9	6.1	6.1	
Genitourinary System Disorders	2.9	3.2	2.7	2.9	
Injuries	4.7	4.4	4.8	4.8	
Respiratory	2.1	1.9	2.4	2.0	
Severe Visual Impairments	2.8	2.7	3.4	2.6	
Digestive system	2.0	1.9	2.0	2.0	
Other impairments	12.0	12.4	11.9	11.7	
Length of SSDI receipt					
Short duration (36 months or less)	42.2	43.2	40.8	42.1	0.079
Number of Months Received SSDI	75.1	73.3	79.4	74.2	0.040
Benefit Amount and Status					
Monthly SSDI Benefits ($)	1079.3	1075.4	1084.1	1080.3	0.689
Disabled adult child (DAC)	3.7	3.7	3.9	3.6	0.891
Disabled widow beneficiary (DWB)	1.0	1.1	0.8	1.1	0.204
Dually-entitled disabled adult child	1.2	1.1	1.5	1.0	0.307
Dually-entitled disabled widow beneficiary	0.6	0.6	0.4	0.7	0.254
Payee is other than self	8.4	8.1	8.3	8.8	0.450
Site					
Alabama	8.0	7.9	8.0	8.1	N/A
Arizona/Southeast California	13.9	13.7	14.0	14.1	
Colorado/Wyoming	6.7	6.6	7.0	6.7	
DC Metro	13.5	13.2	13.8	13.7	

Characteristic	Percent of All Stage 2 Volunteers	Percent of Volunteers in:			p-Value
		T21	T22	C2	
Greater Detroit	12.1	12.1	12.2	12.0	
Greater Houston	9.4	9.5	9.4	9.3	
Northern New England	3.2	3.3	3.0	3.1	
South Florida	10.0	10.3	9.9	9.7	
Western New York	12.2	12.3	11.7	12.4	
Wisconsin	11.1	11.1	11.2	11.0	
Omnibus statistical test		F-statistic =	0.8	p-value =	0.820

Source: SSA administrative records from the MBR..

Note: p-values shown are from statistical tests of differences in percentages across the T21, T22, and C2 groups. Sets of mutually-exclusive characteristics were tested for differences with chi-squared tests. Single characteristics not part of a mutually-exclusive set were tested for differences by F-tests. The F-statistic shown at bottom is from an omnibus statistical test of difference between groups across all characteristics except site. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

[a] The age category "55 and over" includes ages 55-61. The age eligibility for the BOND evaluation was ages 20-59 as of May 1, 2011, with a handful of exceptions involving very early pilot cases whose age eligibility was established as of December 2010. The ages reported in this table are as of the date when a beneficiary's name and contact information were released to the recruitment team. A few beneficiaries had reached their 61st birthday by the time their name was released to the recruitment team in May 2012.

Appendix C. Study Sites and Disability Service Environment

BOND was designed to produce valid, nationally representative estimates of the impact of the benefit offset for all SSDI beneficiaries, including concurrent beneficiaries (Stage 1), and for recruited and informed SSDI-only volunteers (Stage 2). Toward that goal, the 10 randomly selected BOND sites reflect national variation in the local economies, service delivery systems, and other contextual characteristics. Although the evaluation does not estimate site-specific impacts, knowledge of site-level variation in background characteristics and changes in site environments during BOND contribute to understanding the study findings.

The BOND sites differ in five salient ways: (1) geographic characteristics; (2) strength of the local economic environment; (3) presence of non-BOND SSDI work incentives counseling services; (4) availability of employment services and other work-focused, disability-related resources; and (5) number and staffing configuration of BOND work incentives counseling providers.

C.1 Geographic Characteristics

Sites vary in population density, geographic dispersion of SSDI beneficiaries, and the number of states and communities included in their catchment areas, as shown in Exhibit C-1. As discussed in Section 2.2 of Derr et al. (2015), this geographic variation has implications for the demonstration. Service delivery is more complex in sites where staff at BOND service providers (WIC/EWIC administrators, supervisors, benefits counselors, and other field staff) must understand and navigate multiple sets of state and community policies and resources, and tailor service delivery accordingly. For example, the four-state Northern New England site relies on four state VR agencies to provide services to beneficiaries. In contrast, the Greater Detroit site is contained entirely within the state of Michigan. Work incentives counseling staff also stated that beneficiaries in rural areas may face additional challenges regarding access to jobs and employment support services compared to beneficiaries in urban areas.

C.2 Local Economic Environment

The U.S. economy improved from 2011 through 2015, but not uniformly across BOND sites. We observe variation in the employment rates for individuals with and without disabilities in the 15 states represented by the 10 BOND sites. However, past research does not clearly indicate whether better local economic conditions should have been expected to increase the impact of the benefit offset on employment and earnings.

In two ways, the relative strength of the local economic environment may affect beneficiaries' opportunities to engage in SGA, a necessary step toward using the benefit offset. First, if there are few job openings, individuals with disabilities may experience difficulty in finding employment. Evidence suggests that, while job opportunities for all workers deteriorate in a recession, opportunities deteriorate even more for individuals with disabilities than for others (Livermore et al. 2012). Second, in a weak economy, declines in state revenues often lead to cuts in funding for support services used by people with disabilities (Johnson et al. 2011). Both of these factors affect employment options for treatment group and control group members; therefore, we cannot confidently predict the direction of the effect of various local economic conditions on demonstration impacts. Some evidence suggests that employment-related interventions have greater impacts when local economic conditions are stronger (for example, Bloom et al. 2003; Greenberg et al. 2003), but there is also evidence for the opposite relationship—greater impacts

during periods of weaker economic conditions (Card et al. 2015). Thus, it is plausible that the offset would have a larger impact in a stronger labor market, but there is no guarantee.

For people with disabilities, the employment rate—the number of individuals working as a share of the total population age 18 to 64, including those not looking for work—provides a more useful measure of the strength of the labor market than the oft-reported unemployment rate (Burkhauser et al. 2003). That is because the employment rate's denominator contains all potential workers, including discouraged workers (those who have stopped looking for work), while the unemployment rate excludes such workers. Many discouraged workers are people with disabilities. Given that a large number of potential workers become discouraged and no longer seek work during economic downturns, the employment rate tends to fluctuate more than the unemployment rate over the business cycle, providing a measure that is more sensitive to the work engagement of the adult population, especially among people with disabilities.

Leading up to BOND enrollment in 2011, the national employment rate among people without disabilities age 18 to 64 had fallen from 75.0 percent in 2007 (before the 2008 recession) to 72.8 percent in 2011, a 2.9 percent decline.[32] For people with disabilities age 18 to 64, the national employment rate had fallen from 36.2 to 32.6 percent, a substantially larger relative decline of 9.9 percent.[33] Similar changes were observed in the rates for the 15 states represented in the 10 BOND sites. In those states, the employment rate for people without disabilities fell from 76.3 percent in 2007 to 74.5 percent in 2011, a 2.4 percent decline. For those with disabilities, the corresponding decline was from 38.1 to 34.9 percent, an 8.4 percent drop.

From 2011 to 2015, the period of the impact analysis for this report, the national employment rates recovered to pre-recession levels for people with and without disabilities: from 32.6 percent to 34.9 percent for people with disabilities, a 7.1 percent increase, and from 72.8 percent to 76.0 percent for people without disabilities, a 4.4 percent increase (Exhibit C-2). The average rates in the states represented in the BOND sites increased by similar amounts for people with disabilities, from 34.9 percent to 36.3 percent (a 6.7 percent increase), and for people without disabilities, from 74.5 percent to 77.2 percent (a 3.8 percent increase).

During the same time period, the change in state-level employment rates among people with disabilities varied across the 15 states in the BOND sites. The employment rate for people with disabilities fell by 5.7 percent in Maine (in the Northern New England site) and by 1.5 percent in Colorado (in the Colorado/Wyoming site). The remaining 13 states all experienced increases in the employment rate for people with disabilities. The states with the largest increases in the employment rate from 2011 to 2015 happen to be within the same multistate BOND sites as the two states that experienced declines in the

[32] See notes to Exhibit C-2 for sources for 2011. For 2007, data comes from Tables 16 and 17 of the 2009 Annual Disability Statistics Compendium, see Rehabilitation Research and Training Center on Disability Statistics and Demographics (2009).

[33] As is true for all surveys, there is some sampling error in the Current Population Survey, the source for these employment rates. The sampling error is greater for people with disabilities than for the larger sample of people without disabilities. Because of the sampling error, estimates of changes in employment rates may be lower or higher than the actual change.

employment rate: Wyoming (19.5 percent), followed by two of the other Northern New England states (13.3 percent in Vermont and 10.7 percent in Massachusetts).

The state-level employment rates for people with disabilities at the end of 2015 varied across the 15 states. Seven of the 10 sites included at least one state with an employment rate for people with disabilities lower than the national average. Wyoming had the highest 2015 employment rate among people with disabilities, at 57.1 percent; Alabama experienced the lowest employment rate for the same population, at 27.9 percent.

The qualitative data from the focus groups with WIC and EWIC supervisors and counselors in 2016 are consistent with these statistics. In four focus groups, several counselors reported noticeable improvements in the availability of jobs for people with disabilities between 2014 and 2016. Most of the counselors who described improvements attributed them to stronger economic conditions. However, several counselors countered that they had not observed similar improvements in their sites.

C.3 Non-BOND SSDI Counseling Services

The WIPA program offers work incentives counseling to SSDI beneficiaries who are subject to current law, including those in the BOND control groups. For BOND treatment beneficiaries, WIC services are offered to T1 and T21 subjects, whereas enhanced counseling services, known as EWIC services, are offered to T22 subjects. The WIC services provided to T1 and T21 subjects are intended to be similar in design and intensity to the WIPA services available to the control groups, though reflective of the offset rules. In contrast, the EWIC services provided to T22 subjects feature enhancements compared to WIC and WIPA services that are designed to increase the impacts of the benefit offset on earnings and benefits.

This section summarizes two changes to the availability and delivery of WIPA services that might have affected differences between WIPA and WIC services, and might therefore have affected the impact of BOND on employment and benefit outcomes. Qualitative findings suggest, however, that the changes to WIPA were minor enough that they were unlikely to affect impacts (Hoffman et al. 2017, Section 3.3).

The first change was a 14-month suspension of WIPA funding when authority for the program ended in June 2012. Most BOND sites maintained some level of counseling services for current-law beneficiaries in the demonstration control group during this time but some control group subjects may have experienced disruptions in the availability of counseling services. The lapse of WIPA funding did not affect funding for WIC or EWIC services to T1, T21, and T22 subjects, nor did it affect the nature of those services.

The second change to WIPA occurred in August 2015, when SSA awarded a new round of grants following a competitive application process (SSA 2015). The new round of grants instituted 10 changes to the WIPA program, with the goal of providing more targeted, comprehensive, and intensive services with a larger use of remote delivery. After consulting with the BOND Implementation and Evaluation Teams, SSA decided not to change WIC services in response to these WIPA changes because the latter were not expected to affect the outcomes for the control group subjects to an appreciable degree.

During the 2016 focus groups with BOND staff, several WIC counselors reported differences in the level of support offered by WIC and WIPA services; however, counselors' perspective on which type of service was more intensive varied by site and the counselors' role in conducting post-entitlement work. In two focus groups, several WIC counselors reported that they believe that WIPA counselors do not provide

the same level of attention and support to beneficiaries as do WIC providers, especially for beneficiaries who are not yet working.[34] By contrast, several WIC counselors (who perform earnings reporting and other operational functions required for BOND) suggested that their time allocated to BOND has not been sufficient to provide work incentives counseling as timely as can be provided by WIPA counselors.

C.4 Employment Services and Other Work-Focused, Disability-Related Resources

To engage in SGA and use the benefit offset, some beneficiaries might need the help of employment services. Providers of these services include state VR agencies and other providers acting as employment networks (ENs) under SSA's Ticket to Work program. WIC and EWIC counselors can refer BOND subjects to such providers, just as WIPA counselors can for control group subjects and other SSDI beneficiaries subject to current-law rules. For example, a counselor might refer a beneficiary in need of career counseling or assistive technology to an EN.

WIC and EWIC counselors have described VR as the primary employment services provider for BOND subjects; however, these resources were not consistently available (Derr et al. 2015). As of 2013, in at least a portion of four of the study sites—Arizona, DC Metro, Colorado/Wyoming, and Wisconsin—VR lacked the resources to provide services to all eligible beneficiaries. These providers operated under an order of selection in which they gave top priority to applicants with the most significant disabilities.[35] Most SSDI beneficiaries received high priority but sometimes faced substantial wait times, according to WICs and EWICs in 2013 and 2016.

For beneficiaries who received VR services, WIC and EWIC counselors have reported mixed experiences in terms of how helpful the services were to beneficiaries in their caseloads. In response to an online poll, counselors reported on how often referrals to employment support services helped BOND beneficiaries in their own caseloads begin, maintain, or increase work. About 14 percent (5 out of 35 respondents) responded "usually," 57 percent (20 out of 35) responded "some of the time," and 26 percent (9 out of 35) responded "rarely."[36] Two counselors reported that employment support services were less helpful for beneficiaries with relatively high levels of education or work experience because services were tailored to individuals seeking entry-level employment or employment in a new occupation. Counselors have also indicated that the quality of services provided varied by VR office location and VR worker.

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[34] The WIC counselors who made these observations were from sites where a centralized team conducted post-entitlement work. These staff may have had more time to spend with beneficiaries than WIC counselors who continued to perform post-entitlement work.

[35] The state agency is required to implement an order of selection when it will not have sufficient fiscal and/or personnel resources to fully serve all eligible people. An order of selection consists of priority categories to which eligible people are assigned based on the significance of their disabilities as defined in the statute language on eligibility for VR services. Those with the most significant disabilities are served first. If an agency is in an order of selection, it will develop an individual plan for employment only for those for whom the agency is able to provide services. Those who do not meet the agency's order of selection will be put on waiting lists and must be provided with access to the services available through the agency's information and referral system.

[36] In addition, one counselor participating in the online poll responded "Don't Know" when asked how often employment support services helped beneficiaries in his caseload begin, maintain, or increase work.

Beneficiaries also reported mixed experiences with employment support services. We asked work-oriented beneficiaries about their experiences during 2015 in-depth interviews. Among the nine T1 beneficiaries who received services, five described them as unhelpful, three beneficiaries said the services they received were helpful, and one did not comment on the utility of services. Among the eight T21 and T22 subjects who received services, seven described the services they received as unhelpful and only one beneficiary said that the services were helpful. It is possible that, as posited by counseling staff, the observed variation in satisfaction reflects the skills and needs of beneficiaries, among other factors.

Counselors and supervisors have noted that the counselors' role in the referral process can influence beneficiaries' experiences with employment support services. In 2016, counselors in two focus groups indicated that beneficiaries were more likely to follow through with referrals if the WIC or EWIC provided the beneficiary with detailed information about what to expect from VR services. This information might include the timeline for receiving services, how often the beneficiary would interact with the service provider, and what types of services the beneficiary would receive. Two EWIC counselors noted that having a close working relationship with VR counselors made it easier to support beneficiaries in their caseloads during the referral process and enhanced beneficiaries' experience with VR services.

Although it is possible that inconsistent or limited access to helpful employment services has made it difficult for some beneficiaries to use the offset, these issues would presumably affect their earnings under current law as well. Issues with access to employment services might help explain the absence of a significant impact on use of employment services for treatment subjects compared to control subjects (see Chapter 3), but there are other important reasons to expect no detectable impact for this comparison. First, under current law, a large majority of SSDI beneficiaries who earn above the SGA level long enough to have their benefits suspended do not use employment services under the Ticket to Work program.[37] Second, we expected that a large percentage of those induced to earn above BYA by the offset would already be working, and it seems likely that such workers would have lower need for additional employment services than those who were not working. In fact, previous impact estimates indicate that 60.9 percent of T1 subjects and 47.6 percent of Stage 2 treatment subjects (T21 and T22 combined) induced to earn above BYA under the offset were already working when they were enrolled in BOND.[38] Taken together, these factors suggest that impacts on receipt of employment services would be smaller and harder to detect than impacts on outcomes such as employment and earnings above BYA.

C.5 Sites' Arrangements for Providing BOND Work Incentives Counseling

To deliver BOND WIC and EWIC services to treatment subjects (Chapter 3), the BOND Implementation Team contracted with local providers already engaged in disability service delivery. Cross-site variation in available providers and geographic coverage areas led to cross-site variation in BOND provider

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[37] Liu and Stapleton (2011) found that of the SSDI awardees in 1996 who had their benefits suspended for work within the next 10 years, only 21 percent had used employment services. Schimmel Hyde and Stapleton (2015) report that among all beneficiaries whose benefits were suspended or terminated because of work in 2010, only 10.6 percent had used Ticket to Work.

[38] These percentages are point estimates, so may differ from the corresponding percentages in a national offset program. See footnotes Chapter 7, Sections 7.2.1 and 7.2.2, for further detail.

arrangements. As detailed in Exhibit C-1, arrangements varied by several factors, including: the number of providers in a site; the type of provider organizations (for example, nonprofit agency, state VR agency, or educational institution); and the providers' staffing models (dispersed, in which staff allocate a portion of their time to BOND, versus consolidated, in which most staff involved in the demonstration devote all of their time to BOND).

Differences across sites in provider arrangements affected several aspects of implementation, including (1) providers' ability to accommodate planned reductions in the number of their full-time equivalent (FTE) positions over the course of the demonstration, (2) the need for coordination and oversight, (3) counselors' knowledge of local systems, (4) accessibility of services to beneficiaries, and (5) currency of counselors' skills and training. In particular:

- The number of providers and their staffing arrangements affected the proximity and content of services offered to beneficiaries. Sites that covered relatively large geographic areas, especially more than one state, were more likely to have multiple providers or dispersed staffing structures. Such arrangements placed counselors closer to beneficiaries across the site and employed counselors with knowledge of local resources.
- Relative to sites with fewer providers or more consolidated staffing structures, sites with more providers and dispersed staffing structures required greater coordination and oversight from the Implementation Team to ensure that providers and staff conducted demonstration activities consistently and as intended.
- Provider and staffing configurations affected counselors' ability to maintain their skills and engage in related training. Staff in sites with fewer providers and more consolidated staffing structures found it easier to consult with their on-site colleagues for support, meet their training obligations, build expertise, and otherwise keep abreast of BOND policies and procedures. These factors in turn may have affected the quality of post-entitlement work, such as calculating AEEs.[39] A review by the BOND Implementation Team found that, relative to WIC providers with a consolidated staffing model, WIC providers with a dispersed staffing model made more errors in BOND post-entitlement work.
- Providers' staffing arrangements and overall size affected their ability to respond to the demonstration's planned reductions in FTEs. Larger providers such as state VR agencies had more options for reassigning staff hours to non-BOND work in response to planned reductions in FTEs and to fluctuating workloads. Similarly, sites with dispersed staffing structures had greater flexibility to accommodate changes because multiple staff members combined part-time BOND counseling roles with work supported by other funding sources.

In addition, two changes affected most or all BOND counseling providers. The first was a planned reduction in FTEs for counseling staff in December 2014, due to expected declines in caseloads of WIC and EWIC clients as the demonstration proceeded.[40] Second, to improve the quality of post-entitlement

[39] In Chapter 4, we discuss post-entitlement work, which refers to the activities required to facilitate the benefit adjustment process under the offset rules.

[40] As detailed in the Implementation Team's internal planning documents, the team anticipated smaller caseloads over time because of expectations that (1) treatment subjects who took up counseling services earlier in the

work, in December 2013, the Implementation Team shifted the majority of post-entitlement work to a centralized team. Centralization of this work was implemented in Arizona/Southeastern California (WIC and EWIC), Colorado/Wyoming (WIC and EWIC), DC Metro (WIC only), Greater Houston (WIC and EWIC), Northern New England (WIC and EWIC), South Florida (WIC and EWIC), and Wisconsin (WIC only) in December 2013 and in Alabama (WIC only) in January 2015. Detroit implemented centralization for EWIC staff in December 2013 and for WIC staff in January 2016.

Finally, changes to the WIPA program in 2012 and 2015 led to changes in BOND staffing because many organizations provide both WIPA and BOND counseling services. Specifically, the loss of WIPA funding from June 2012 to August 2013 led to WIC and EWIC staffing changes in 6 of the 10 BOND sites (see Exhibit 2-3 in Derr et al. 2015). The August 2015 award of a new round of WIPA grants had a more limited effect on BOND counseling providers, resulting in BOND staffing changes in only two of the 10 sites.

C.6 Summary

This appendix has described the diversity of the employment and service delivery environments in the BOND sites. This diversity led to variation in implementation practices within BOND. We would expect to see comparable variation in the implementation of a national program similar to the BOND benefit offset, because the randomized site selection process was designed to ensure that the environmental diversity in the selected sites is similar to the diversity across all areas of the nation.

Several changes in site environments during the demonstration period, along with cross-site differences, may influence results of the BOND impact evaluation. Notably, in most sites employment rates have improved substantially between 2011 and 2015, reflecting the continuation of the economic recovery. This trend may have made it easier to find a job and take advantage of work incentives available. (In contrast, an economic recession would dampen the possibility of detecting earnings impacts because increasing earnings would have been difficult, even with increased generosity of work incentives.)

Second, the availability of employment support services for BOND beneficiaries has varied across sites. WIC and EWIC counselors have reported that, for some beneficiaries, access to employment services has posed challenges to working and using the offset.[41] WIC, WIPA, and EWIC counselors do not provide

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demonstration would need less support as time elapsed and (2) relatively few beneficiaries would take up counseling services for the first time later in the demonstration.

41 There is no indication that either the economic environment or the availability and quality of service referrals differed for treatment subjects versus control subjects, with one exception: the 14-month interruption in funding for WIPA may have influenced the availability of counseling services (including referrals made by counselors) for some control group subjects but not for treatment group subjects during that period. Even then, however, some control subjects had access to counseling services. For example, for 13 months of the 14-month lapse, 20 community work incentive counselors provided telephonic counseling services to beneficiaries throughout the nation (both BOND and non-BOND beneficiaries) who were employed, had a pending job offer, or were actively seeking employment (Hoffman et al. 2017). In addition, some WIPA providers were granted a no-cost extension to continue services. However, in at least a portion of the study sites, there was a decrease in services available to the control group, because counseling was limited to a select group (for example, VR clients only), or because there were reductions in the types or intensity of services (information and referral [I&R] only), or because counselors did not accept new clients (Derr et al. 2015).

employment support services, but refer beneficiaries to these services. Even if EWIC counselors are very effective at reaching T22 subjects, capacity constraints in employment support services may prevent evaluators from seeing an impact of EWIC on receipt of employment support services or an impact of EWIC on outcomes (such as employment and earnings) that result from receipt of employment support services.

Exhibit C-1. Characteristics of BOND Sites

Site	Number of States	Population Density[1]	Geographically Dispersed[2]	Number of BOND Work Incentives Counseling Providers	Types of Providers	Dispersed Staffing	Centralized Post-Entitlement Process
Alabama	Single	94 (AL)	X	1	• Nonprofit		X (WIC only)
Arizona/ SE California	Multiple (1 full, 1 partial)	56 (AZ) 239 (CA)		2*	• Nonprofit		X
Colorado/ Wyoming	Multiple (2)	49 (CO) 6 (WY)	X	2	• Nonprofit • SVRA	X (WIC)	X
DC Metro	Multiple (1 full, 3 partial)	9,856 (DC) 203 (VA) 595 (MD) 77 (WV)		4*	• For-profit • Nonprofit • Other[3]		X (WIC only)
Greater Detroit	Partial	175 (MI)		1	• Nonprofit		X
Greater Houston	Partial	96 (TX)		1	• Nonprofit	X (WIC)	X
Northern New England	Multiple (3 full, 1 partial)	147 (NH) 43 (ME) 839 (MA) 68 (VT)	X	5	• Nonprofit • SVRA • University • Medical Center	X (ME,WIC; VT,WIC)	X
South Florida	Partial	96 (FL)		1	• Nonprofit		X
Western New York	Partial	411 (NY)		5*	• Nonprofit • Advocacy Organization	X (WIC)	
Wisconsin	Partial	105 (WI)	X	7	• Nonprofit • State Health Agency • University	X (EWIC, WIC)	X (WIC only)

Sources: Based on BOND Operations Data System, staff interviews, and additional data collection from BOND site visits.

N/A = Not applicable.

* Indicates sites that rely on Virginia Commonwealth University (VCU) to provide telephonic EWIC services to some or all T22 subjects, depending on the site. VCU is included in the count of work incentives counseling providers for these sites.

[1] Population density indicates number of individuals per square mile of land in 2010. The average population density for the United States in 2010 was 87 individuals per square mile.
[2] "Geographically dispersed" (or rural) defined as 20 percent or more of the SSDI population living outside Metropolitan Statistical Areas (MSAs). See Gibson et al. (2008). .

[3] Association of disability service providers.

Exhibit C-2. Employment Rates in the BOND Sites, 2011 and 2015

Site	State(s) Partially or Totally Included in Site	Employment Rate for People Without Disabilities, age 18–64 (%)			Employment Rate for People with Disabilities, age 18–64 (%)		
		2011	2015	Percent Change	2011	2015	Percent Change
Alabama	Alabama	70.2	71.8	2.3	26.5	27.9	5.3
Arizona/SE California	Arizona	69.9	73.1	4.6	32.8	34.2	4.2
	California	69.5	73.1	5.2	31.4	33.8	7.6
Colorado/Wyoming	Colorado	76.3	79.3	3.9	41.4	40.8	-1.5
	Wyoming	80.1	79.1	-1.3	47.8	57.1	19.5
DC Metro	District of Columbia	71.5	77.5	8.4	30.0	31.4	4.7
Greater Detroit	Michigan	70.2	75.4	7.4	28.9	30.9	6.9
Greater Houston	Texas	73.5	75.5	2.7	36.9	38.6	4.6
Northern New England	Maine	78.1	79.7	2.5	31.4	29.6	-5.7
	Massachusetts	76.9	79.5	3.4	31.7	35.1	10.7
	New Hampshire	79.5	82.9	4.3	36.8	39.5	7.3
	Vermont	80.0	81.0	1.3	36.2	41.0	13.3
South Florida	Florida	70.6	74.1	5.0	29.2	31.1	6.5
Western New York	New York	72.1	74.9	3.9	31.3	33.0	5.4
Wisconsin	Wisconsin	78.7	82.3	4.6	38.7	41.2	6.5
Average Across 15 Included States[1]	--	**74.5**	**77.2**	**3.8**	**34.1**	**36.3**	**6.7**
Entire United States[2]	--	**72.8**	**76.0**	**4.4**	**32.6**	**34.9**	**7.1**

Source: American Community Survey. Data for 2015 come from Tables 2.1 and 2.2 of the 2016 Annual Disability Statistics Compendium, based on data from U.S. Census Bureau, 2015 American Community Survey, American FactFinder, Table B18120; http://factfinder2.census.gov. Data for 2011 come from Tables 2.1 and 2.2 of the 2012 Annual Disability Statistics Compendium, based on data from U.S. Census Bureau, 2011 American Community Survey, American FactFinder, Table B18120; http://factfinder2.census.gov; accessed by compendium authors on September 24, 2012.

[1] Unweighted arithmetic average.

[2] Figures include the 50 states, District of Columbia, and Puerto Rico, weighted by relative population size

Appendix D. Additional Results Related to Chapter 3: BOND Benefits Counseling, Outside Services, and Knowledge of How Earnings Affect Calculation of Benefits

Exhibit D-1. Receipt of Any Work Incentives Counseling (through December 2016) by T21 and T22 Subjects

Time Period	Percentage of Subjects Who Received Any Work Incentives Counseling in Time Period		
	Offset and EWIC (T22)	Offset and WIC (T21)	Estimated Impact on Counseling Receipt (T22 vs T21)
Enrollment - December 2016 (Full time Period)	95.9	38.8	57.1*** (3.3)
Random assignment - December 2012	89.5	28.1	61.4*** (3.6)
January 2013 - December 2013	79.5	14.2	65.3*** (4.3)
January 2014 - December 2014	61.5	8.8	52.7*** (6.5)
January 2015 - December 2015	40.1	3.9	36.3*** (6.5)
January 2016 - December 2016	30.0	2.0	27.9*** (6.5)

Source: SSA administrative records from the BTS and MBR and the Stage 2 Baseline Survey.

Notes: "Any work incentives counseling" is defined as any contact with the beneficiary. See Section Appendix B.2 for details about the Stage 2 methodology for exploratory analysis. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T21 = 4,854 and T22 = 3,041.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit D-2. Receipt of Work Incentives Counseling Beyond Information and Referral by T21 and T22 Subjects

Time Period	Percentage of Subjects Who Received Work Incentives Counseling Beyond I&R in Time Period		
	Offset and EWIC (T22)	Offset and WIC (T21)	Estimated Impact on Counseling Receipt (T22 vs T21)
Enrollment - December 2016(Full time Period)	95.4	32.5	62.9*** (3.0)
Random assignment - December 2012	88.2	21.7	66.6*** (3.5)
January 2013 - December 2013	78.9	11.6	67.3*** (4.4)
January 2014 - December 2014	60.5	7.6	52.9*** (6.7)
January 2015 - December 2015	39.1	3.4	35.7*** (6.3)
January 2016 - December 2016	28.6	1.7	26.9*** (6.1)

Source: SSA administrative records from the BTS and MBR and the Stage 2 Baseline Survey.

Notes: Information and Referral (I&R) service includes general information about how earnings affect benefits, and answers to basic questions about available counseling and employment services. Counseling beyond I&R begins when a beneficiary "enrolls" in counseling, receiving individualized assessments of how earnings affect benefits, support to find employment services and, in needed, case management services.

See Section Appendix B.21 for details about the Stage 2 methodology for exploratory analysis. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T21 = 4,854 and T22 = 3,041.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment..

Exhibit D-3. EWIC Service Delivery, by Site and Counseling Service Type

Benchmarks	Percent of T22 Subjects that Received:					
	Barriers and Needs Assessments	Skills Assessment and TSA	Employment Support Plan	Service Coordination	Direct Employment-Related Referrals	Employment-Support Referrals
	90% Who Engage in Services	90% Who Engage in Services	90% Who Engage in Services	80% Who Have ESPs	N.A.	N.A.
Alabama	98	92	92	95	61	30
Arizona, SE California	91	64	91	71	57	42
Colorado/Wyoming	96	93	90	84	79	61
DC Metro	94	92	93	87	74	52
Greater Detroit	94	81	86	68	72	58
Greater Houston	98	97	89	98	81	89
Northern New England	90	89	85	64	46	12
South Florida	95	90	93	93	81	68
Western New York	99	92	86	66	63	21
Wisconsin	96	84	86	70	51	16
TOTAL	**95**	**87**	**89**	**79**	**66**	**44**

Source: BTS records as of July 2017.

Unweighted sample size: T22 = 3,041.

Exhibit D-4. Estimated Impact on Use of Ticket to Work Program and Vocational Rehabilitation Services for Stage 1 Subjects

Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
State Vocational Rehabilitation Agency Services (January 2011–September 2015)				
Any use of state VR agency services (%)	3.83	3.87	-0.04	0.10
Number of years with use of state VR agency services	0.09	0.09	-0.00	0.00
Employment Network Services (January 2011–September 2015)				
Assigned ticket to any EN service (%)	7.04	6.97	0.07	0.15
Amount of payments to ENs under TTW payment systems ($)	$87	$79	$8	$8

Source: RSA-911 records and SSA administrative records from the DAF (2015) and MBR.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101, C1 = 891,429

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit D-5. Time Paths of Estimated Impacts on Use of Ticket to Work Program and Vocational Rehabilitation Services for Stage 1 Subjects

Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
Any Use of State Vocational Rehabilitation Agency Services (%)				
2011	2.56	2.63	-0.07	0.08
2012	2.55	2.56	-0.01	0.09
2013	2.11	2.06	0.05	0.07
2014	1.39	1.41	-0.02	0.06
2015	0.65	0.65	-0.00	0.03
Any Employment Network Services (%)				
2011	4.58	4.53	0.06	0.11
2012	3.74	3.69	0.05	0.14
2013	3.70	3.57	0.13	0.10
2014	3.47	3.35	0.13	0.12
2015	3.37	3.27	0.10	0.14
Amount of Payments to ENs Under TTW Payment Systems ($)				
2011	14.33	15.43	-1.10	3.75
2012	15.52	16.55	-1.03	2.65
2013	25.59	18.19	7.40	7.40
2014	20.55	17.16	3.39	2.63
2015	10.97	11.83	-0.85	1.88

Source: RSA-911 records and SSA administrative records from the DAF (2015) and MBR.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101 ,C1 = 891,429

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit D-6. Estimated Impacts on Use of Ticket to Work Program and Vocational Rehabilitation Services for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21) (1)	Average Outcome with Offset and EWIC (T22) (2)	Average Outcome under Current Law (C2) (3)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2) (4)	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2) (5)	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21) (6)
State Vocational Rehabilitation Agency Services (2012-2015)						
Any use of state VR agency services (%)	12.20	15.21	12.17	0.03 (0.77)	3.04** (1.30)	3.01* (1.36)
Number of years with use of state VR agency services	0.26	0.33	0.26	0.00 (0.02)	0.07** (0.03)	0.07** (0.03)
Employment Network Services (2012-2015)						
Assigned ticket to any EN service (%)	19.49	25.80	19.50	-0.01 (0.98)	6.30*** (1.54)	6.31*** (1.09)
Amount of payments to ENs under TTW payment systems ($)	$406	$507	$312	$94 ($136)	$195 ($123)	$102 ($84)

Source: RSA-911 records, SSA administrative records from the DAF (2015) and MBR, and the Stage 2 Baseline Survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimate are regression-adjusted for baseline characteristics.

Ticket assignments to Employment Network (EN) services include assignments to state VR services acting as ENs. The state VR service data includes use with and without a ticket.

Unweighted sample sizes: T21 = 4,854; T22 = 3,041; C2 = 4,849.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit D-7. Time Paths of Estimated Impacts on Use of Ticket to Work Program and Vocational Rehabilitation Services for Stage 2 Volunteers: All Policy Comparisons

Year of Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs. C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs. C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs. T21 SE
Any Use of State Vocational Rehabilitation Agency Services (%)									
2012	9.67	11.46	10.07	-0.40	0.70	1.38	0.92	1.78	1.10
2013	7.92	10.81	8.19	-0.28	0.63	2.62**	0.99	2.89**	1.00
2014	5.54	7.48	5.37	0.17	0.53	2.12**	0.84	1.94*	0.88
2015	2.64	3.46	2.10	0.54	0.36	1.36**	0.44	0.82	0.46
Any Employment Network Services (%)									
2012	14.42	16.30	13.91	0.51	0.82	2.39**	0.95	1.87*	0.95
2013	13.69	18.43	13.30	0.39	0.79	5.13***	0.98	4.74***	0.98
2014	12.48	17.02	11.89	0.58	0.77	5.12***	0.95	4.54***	0.95
2015	11.40	15.68	10.68	0.72	0.91	5.01***	0.91	4.28***	0.99
Amount of Payments to ENs Under TTW Payment Systems ($)									
2012	92	137	75	17	24	62	54	45	45
2013	151	131	114	38	70	18	46	-20	48
2014	78	176	84	-6	27	92	58	97*	46
2015	84	63	40	44	30	24	16	-20	25

Source: RSA-911 records, SSA administrative records from the DAF (2015) and MBR, and the Stage 2 Baseline Survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimate are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T21 = 4,854; T22 = 3,041; C2 = 4,849.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit D-8. Estimated Differences in Understanding of How Earnings Affect Benefits, by Employment Status in 2010 (Stage 1) and Employment at Random Assignment (Stage 2)

Assignment Group	Have Heard of BOND at 36-Month Survey (%)			Demonstrated an Understanding of Benefit Adjustment Consistent with Respondent's Earnings Rules at 36-Month Survey (%)		
	Employed Mean	Not Employed Mean	Difference (SE)	Employed Mean	Not Employed Mean	Difference (SE)
Stage 1						
T1	43.5	33.4	10.1*** (2.9)	33.7	28.0	5.7 (3.8)
C1	5.4	4.9	0.5 (1.3)	54.4	54.0	0.3 (3.3)
Stage 2						
T21	98.2	97.5	0.7 (0.6)	44.6	48.5	-3.9 (1.9)
T22	98.6	98.1	0.5 (0.6)	50.2	51.7	-1.5 (2.7)
C22	96.7	97.5	-0.8 (0.5)	61.8	50.0	11.8*** (2.9)

Source: Stage 1 and Stage 2 36-Month Surveys, SSA administrative records from the MBR, and the Stage 2 Baseline Survey.

Note: Appendix Section A.4.1 explains the specification for correct understanding of benefit adjustment. Standard errors are in parentheses.

For Stage 1, weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. The weights, however, do not account for the disproportionately low sampling rate of subjects residing in multi-subject households, especially in the T1 sample (Appendix Section B.3.4).

For Stage 2, weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

*/**/*** Difference is significantly different from zero at the .10/.05/.01 levels, respectively, using an exploratory standard of evidence and a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites).

Appendix E. Additional Results Related to Chapter 4: Using the Benefit Offset

E.1 Methodology for Overpayment Analysis

In this appendix, we describe the approach to estimating work-related overpayments. Our method uses the Master Beneficiary Record, Disabled Beneficiary and Dependents file (DBAD) to estimate overpayments that accrued to both treatment and control subjects while in BOND.

E.1.1. Overpayment Analysis Sample

We begin our analysis of overpayments by identifying disabled-worker beneficiaries in the impact sample who are entitled to SSDI only on the basis of their own earnings histories. We focus on these beneficiaries to avoid potential complications to our method associated with dually-entitled beneficiaries related to the structure of the DBAD. Specifically, in such cases it is difficult to use the DBAD to distinguish between benefit changes due to the primary beneficiary's earnings from those due to own earnings. All statistics pertain to overpayments for the disabled-worker's own benefits and do not include overpayments for auxiliary benefits.

Using the May 2017 DBAD, Exhibit E-1 presents the numbers of beneficiaries in the treatment and control groups in each analysis year. For inclusion in our analysis sample for a given calendar year, we require beneficiaries to be disabled-worker beneficiaries and have DBAD records in all months in the analysis period for that calendar year. Because more beneficiaries are missing DBAD data in earlier years than in the later years, the sample size for the analysis is roughly constant or increasing slightly over time. Among Stage 1 subjects, the sample sizes are smallest in 2011 and are 1.5 percent and 0.6 percent larger for T1 subjects and C1 subjects in 2015, respectively. The Stage 2 sample is roughly constant across the four years of Stage 2 analysis (2012 to 2015).

There is no documentation explaining why the beneficiaries in our sample might be omitted from the DBAD.[42] Some observations are missing from both the DBAD and the BOND MBR extract for the same time period, while other observations are missing from the DBAD and are included in the MBR extract. Among those included in the MBR extract only, many have missing information, while some have information indicating benefit termination (for example, termination due to death). In addition, some beneficiaries have records in the SSA administrative data but are missing basic programmatic information; existing documentation does not explain that anomaly either.

[42] The DBAD selection criteria exclude records from the MBR for several groups who would not have been eligible for BOND at the time SSA selected the BOND sample: those who were advance filers during the year (had applied for SSDI, but had not completed the five-month waiting period), were suspended or terminated before 1990 and have a specific status in the current year, or applied for benefits before 1990 and were denied. Hence, the selection criteria do not exclude BOND-eligible beneficiaries.

Exhibit E-1. Sample Sizes for Overpayment Analysis

	2011	2012	2013	2014	2015
T1	64,180	65,115	65,116	65,122	65,127
C1	712,043	716,403	716,390	716,363	716,354
T21		4,466	4,466	4,467	4,468
T22		2,787	2,787	2,787	2,787
C2		4,450	4,449	4,450	4,447

Note: We begin the Stage 2 overpayment analysis in 2012.

E.1.2. Steps to Estimate Overpayments

The basic computation of an overpayment is the difference between benefits due as initially recorded for a given beneficiary in that month and benefits due after SSA has received and processed information about work that may retroactively affect benefits due. Both of these elements are "benefits due," conditional on having been paid a positive SSDI benefit.

The first step in calculating overpayments is to identify beneficiaries eligible for such overpayments. Eligibility varies by BOND treatment group because of the difference in BOND treatment rules relative to current law. We use updated data from the May 2017 DBAD to flag beneficiary-months in 2011, 2012, 2013, 2014, and 2015 during which overpayments are possible. In other words, we limit the set of beneficiaries who could have incurred an overpayment to those who had (or should have had) their benefits reduced, suspended, or terminated as a result of work activity.

Next, we analyze the records of beneficiaries identified as being eligible for an overpayment to determine whether or not the beneficiary was overpaid and the overpayment amount. Because of the difference in the way work activity affects benefits, our method for identifying and measuring overpayments differs for treatment and control group subjects.

Benefit receipt is binary for control group subjects: the beneficiary was either entitled to a full check on the basis of own work activity or was not so entitled. We classify control group beneficiaries as overpaid during months in 2011 through 2015 in which they met two criteria. First, they worked during or after the reentitlement period of the EPE according to updated data in the May 2017 DBAD extract. Second, according to the same source, the beneficiary was paid an SSDI benefit that month. Because these beneficiaries were not entitled to a benefit check, the benefit due was an overpayment.

For control group beneficiaries, the overpayment amount is equal to the monthly benefit due in that month based on the updated data. Although conceptually the monthly benefit due in the updated data should be reduced to $0, SSA does not adjust the administrative benefit due amount in the updated data for beneficiaries whose benefits are entirely suspended (control subjects and treatment subjects in full offset). Because SSA does not adjust the updated data to reflect that the beneficiary was due $0, the positive benefit due amount in the updated data represents the overpayment amount.[43]

[43] For control subjects, the updated data is used because the positive benefit due amount in the updated data is unchanged from the contemporaneous benefit due amount, upon which the benefit payment was based.

Treatment group subjects who work during the BPP may receive partial benefits under the $1 for $2 offset (referred to as "partial offset") unless their earnings are so high that they are not entitled to receive any DI cash benefit (referred to as "full offset"). We apply the same logic used to identify overpayments among control group subjects to treatment group subjects in full offset: we classify treatment group beneficiaries as overpaid during months in 2011 through 2015 in which they are in full offset and received a benefit check, according to the May 2017 DBAD extract. For treatment group subjects in partial offset, we compare data from months in 2011 through 2015 in the updated May 2017 DBAD data to the contemporaneous data in the monthly DBAD files from 2011 through 2015. We flag as an overpayment any month in which (1) the beneficiary was in partial offset according to the updated data, (2) the updated data indicate that SSA paid a benefit, and (3) the contemporaneous benefit due was greater than the updated benefit due.

For treatment group beneficiaries, we measure the overpayment amount as the difference between the contemporaneous benefit due and either (a) the updated benefit due for beneficiaries in partial offset or (b) $0 for beneficiaries in full offset. We are able to conduct this calculation for beneficiaries in partial offset because SSA does adjust the administrative data to update benefits due for those beneficiaries.

We validated the results of this measurement procedure in several ways. First, we confirmed that the number of offset users identified in the DBAD aligned with the monthly statistics the Implementation Team publishes on the number of identified offset users. Second, we used the 2013 DAF to construct a measure of overpayments using a different methodology and found broad consistency in aggregate across the data sources. Finally, a member of the ORDES work unit conducted in-depth case reviews of 60 randomly selected records to construct an SSA measure of overpayments to compare to our algorithm results. In aggregate, we found consistency in the prevalence and size of overpayments. Additional details on the validation checks are contained in Appendix C of (Hoffman et al. 2017.

The approach we use in this report identifies overpayments based on when they accrued as opposed to when SSA identified the overpayment. For example, consider a beneficiary who had completed the TWP and GP and engaged in SGA in each month from January to December 2013, was paid a benefit during those months, and for whom SSA identified the overpayment in February 2015. Our algorithm would categorize the 12 months from January to December 2013 as overpayment months. An alternate approach would date all of the same overpayment based on when SSA identified it—in February 2015, in this example.

E.1.3. Limitations

The DBAD algorithm does not encompass all overpayment scenarios that can occur for DI beneficiaries. In some non-standard situations not captured in the DBAD data, such as when SSA issues beneficiaries emergency checks in a field office or erroneous checks due to technician error, the algorithm may not accurately predict the presence or size of an overpayment. The DBAD algorithm will also not capture payment changes related to Medicare payments, primary insurance amount adjustments, benefit garnishment, and overpayment recovery. However, there is no reason to think that algorithm errors in these relative rare situations, which can be positive or negative, bias the aggregate estimates.

In addition, in rare instances, the DBAD algorithm may underestimate changes to cumulative overpayment debt. We identify overpayments only in months for which the beneficiary received a benefit check. The logic of this calculation is that if the beneficiary did not receive a payment for the month, there can be no benefit to repay. It is possible that the absence of a payment, based on information

available at the time, has another explanation: SSA thought the beneficiary was due an SSDI benefit check for that month, but withheld the entire check to repay a previous period overpayment. If SSA later determined that the beneficiary was not due an SSDI benefit check for that month, his previous period overpayment debt would increase and this would not be captured in the algorithm. We believe these instances are rare and do not have any material implications to the statistics presented in this report.

Exhibit E-2. Offset Use for Stage 1 Treatment Subjects in Each Demonstration Year (2011 to 2016)

Year	Percent of T1 subjects with At Least One Month of Offset Use in Year [a]
2011	1.1%
2012	1.6%
2013	1.8%
2014	2.0%
2015	2.2%
2016	1.0%

Source: BTS records from August 2017.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

[a] The results in this exhibit are underestimates. They are based on having positive (non-zero) offset payments in those years and offset payment data are incomplete.

Unweighted sample sizes: T1 = 77,097.

Exhibit E-3. EWIC versus WIC Impact Estimates on Steps towards Benefit Adjustment for Stage 2 Treatment Subjects as of the End of Each Demonstration Year (2012, 2013, 2014, 2015 and 2016)

Steps Toward Benefit Adjustment	Average Outcome with Offset and EWIC (T22)	Average Outcome with Offset and WIC (T21)	Estimated Impact of EWIC Instead of WIC Given Offset (T22 vs. T21)
Cessation Date in BTS			
2012	12.5	12.4	0.1 (1.0)
2013	17.9	17.2	0.6 (1.0)
2014	20.9	19.8	1.1 (1.0)
2015	23.3	23.0	0.3 (1.0)
2016	24.9	23.6	1.3 (1.1)
AEE Successfully Submitted to SSA			
2012	6.2	5.2	1.1 (1.2)
2013	12.7	10.3	2.4* (1.3)
2014	16.9	14.1	2.8** (1.0)

Steps Toward Benefit Adjustment	Average Outcome with Offset and EWIC (T22)	Average Outcome with Offset and WIC (T21)	Estimated Impact of EWIC Instead of WIC Given Offset (T22 vs. T21)
2015	18.7	16.6	2.1* (1.1)
2016	20.6	19.4	1.2 (1.0)
At Least One Year or Partial Year of Offset Use Since 2011			
2012	7.4	6.9	0.6 (0.6)
2013	11.2	10.5	0.7 (1.0)
2014	13.4	13.1	0.3 (0.9)
2015	15.6	15.2	0.4 (1.0)
2016	16.0	15.7	0.3 (1.0)

Source: BTS records from August 2017, baseline administrative SSA records, and the Stage 2 baseline survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T22 = 3,041; T21 = 4,854.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites).

Exhibit E-4. EWIC versus WIC Impact Estimates on Offset Use in Each Demonstration Year (2011 to 2016)

At Least One Month of Offset Use in Year	Average Outcome with Offset and EWIC (T22)	Average Outcome with Offset and WIC (T21)	Estimated Impact of EWIC Instead of WIC Given Offset (T22 vs. T21)
2011	2.1	1.1	1.0** (0.4)
2012	6.1	6.1	-0.0 (0.6)
2013	8.3	7.8	0.5 (0.7)
2014	8.9	8.6	0.3 (0.7)
2015	9.8	9.6	0.2 (1.1)
2016	6.2	6.1	0.1 (0.6)

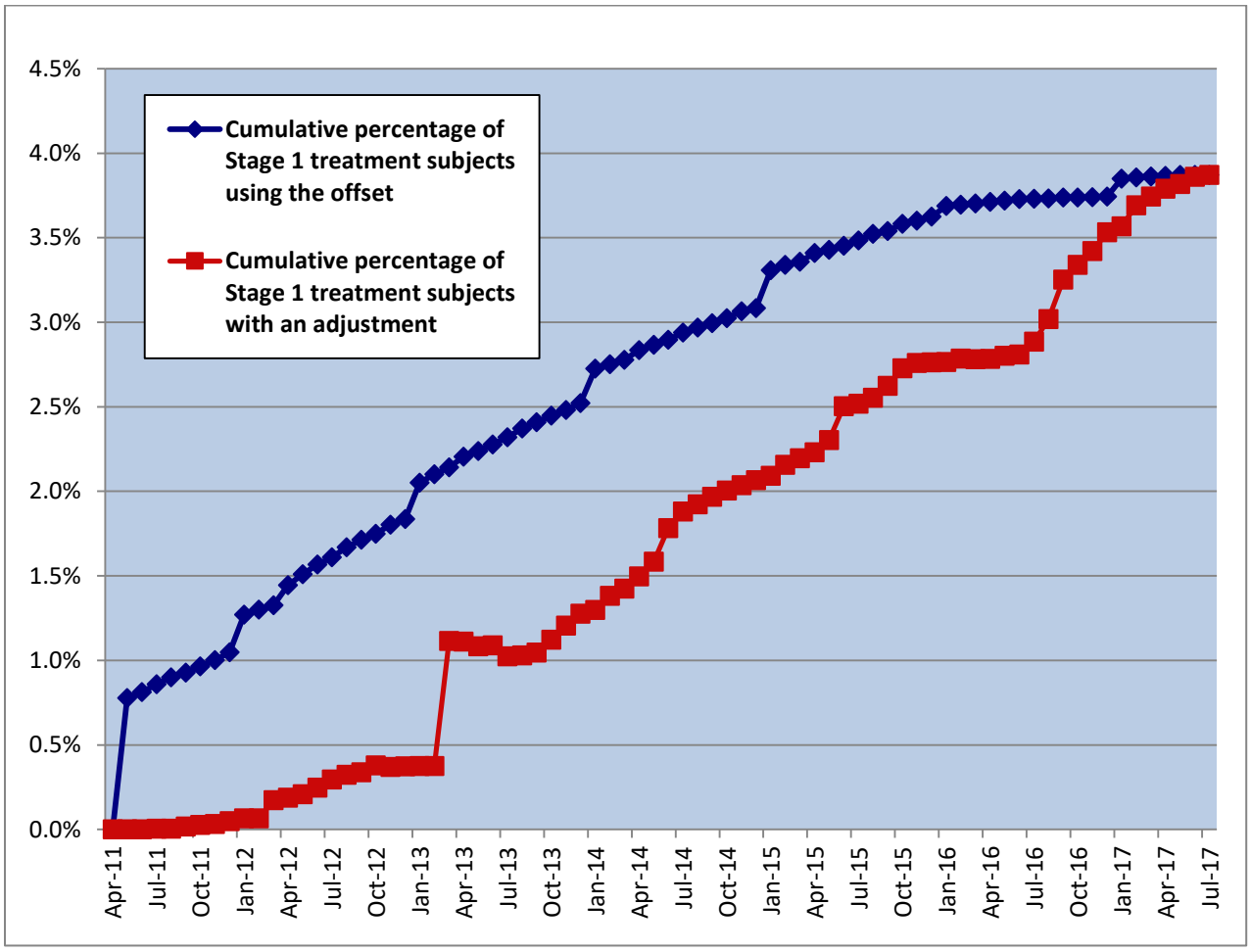
Source: SSA administrative records from the BTS (August 2017) and MBR and the Stage 2 Baseline Survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T22 = 3,041; T21 = 4,854.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit E-5. Stage 1 Cumulative Percentage With Offset Use and Cumulative Percentage With Offset Adjustment, Based on July 2017 Data

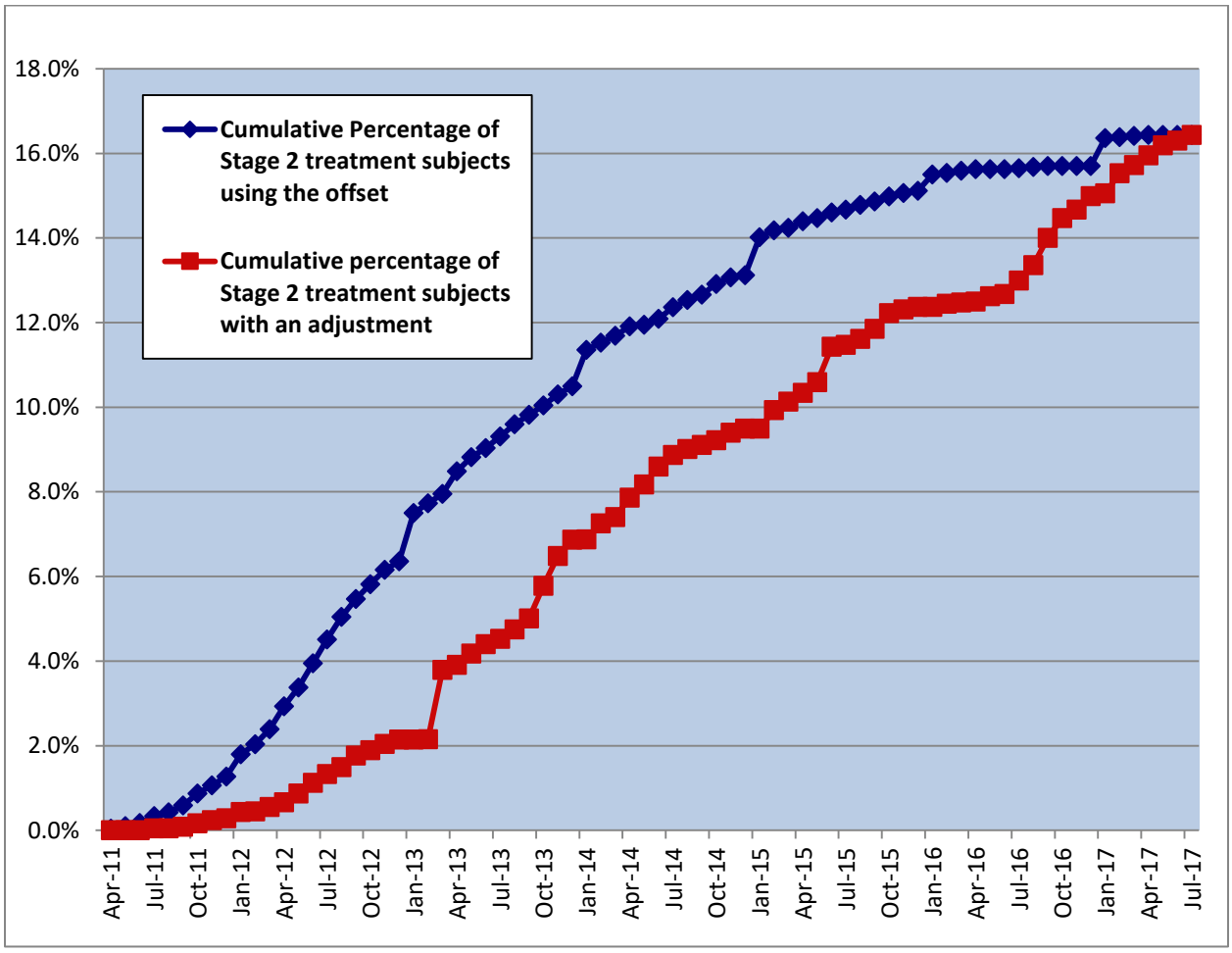


Source: Information on cumulative offset use is from monthly extracts from SSA's MBR as of July 2017. Information on cumulative adjustments is from BTS, BSAS, and MBR data.

Note: The upper line, cumulative percentage of offset users, shows the cumulative percentage of treatment subjects who completed the TWP and GP and then earned above BYA in at least one month, based on administrative records from July 2017. The cumulative percentage of offset users at any point in time presented in this series will continue to increase as SSA completes retroactive adjustments for this period.

The lower line in the exhibit, cumulative percentage with an adjustment, provides information on the months in which initial benefit adjustments under the offset rules were made—usually later than the first month of offset use. It represents the percentage of beneficiaries whose benefits actually have been adjusted under the offset rules as of the month indicated. Declines that sometimes occur in the cumulative percentage with an adjustment(lower line) from one month to the next are due to retroactive reversals of initial adjustments. Such cases are not included in the cumulative percentage of offset users (upper line) because the action determined that they had not actually used the offset.

Exhibit E-6. Stage 2 Cumulative Percentage With Offset Use and Cumulative Percentage with Offset Adjustment, Based on July 2017 Data

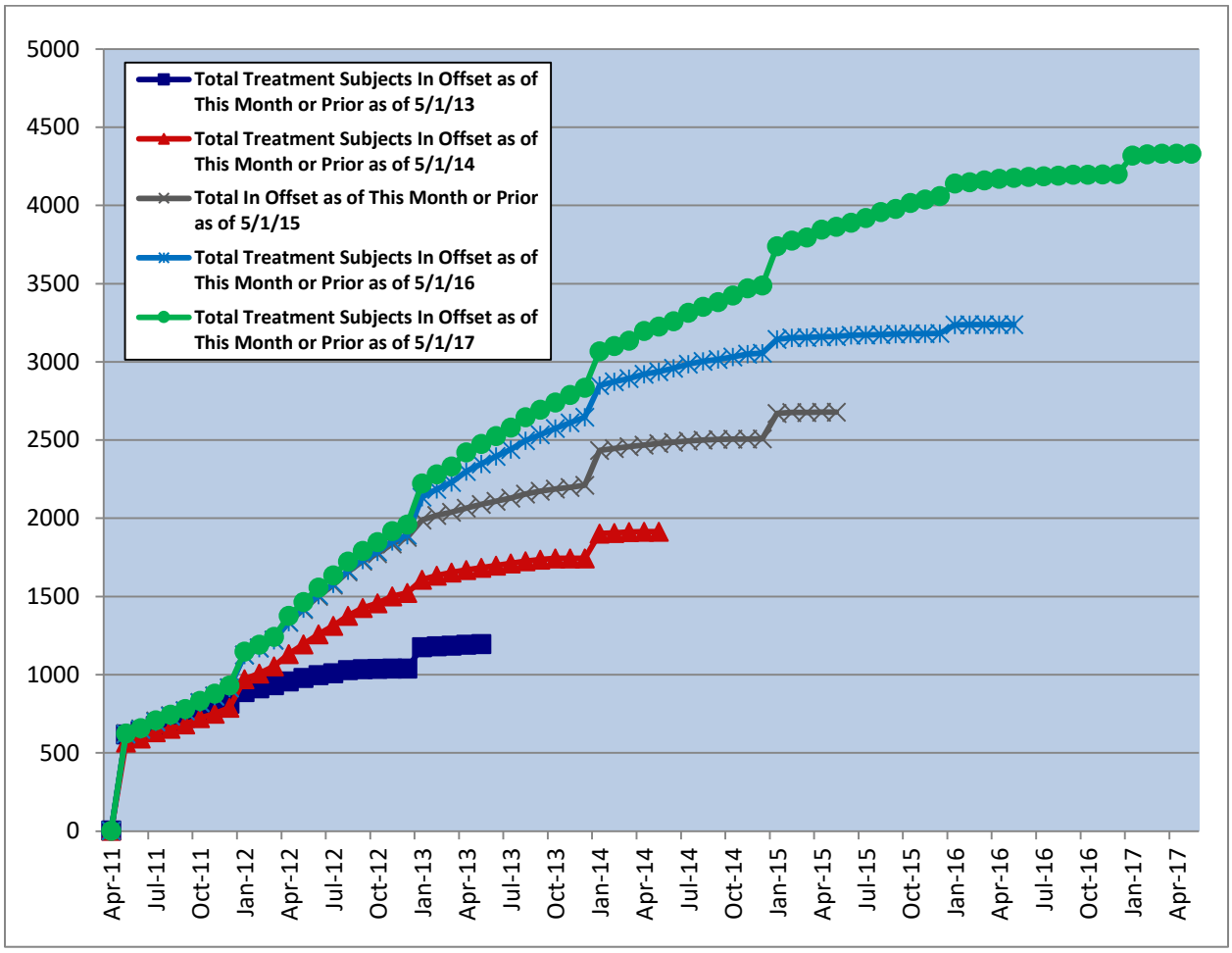


Source: Information on cumulative offset use is from monthly extracts from SSA's MBR as of July 2017. Information on cumulative adjustments is from BTS, BSAS, and MBR data.

Note: The upper line, cumulative percentage of offset users, shows the cumulative percentage of treatment subjects who completed the TWP and GP and then earned above BYA in at least one month, based on administrative records through July 2017. The cumulative percentage of offset users at any point in time presented in this series will continue to increase as SSA completes retroactive adjustments for this period.

The lower line in the exhibit, cumulative percentage with an adjustment, provides information on the months in which initial benefit adjustments under the offset rules were made—usually later than the first month of offset use. It represents the percentage of beneficiaries whose benefits actually have been adjusted under the offset rules as of the month indicated. Declines that sometimes occur in the cumulative percentage with an adjustment(lower line) from one month to the next are due to retroactive reversals of initial adjustments. Such cases are not included in the cumulative percentage of offset users (upper line) because the action determined that they had not actually used the offset.

Exhibit E-7. Total Treatment Subjects in Offset as Known at Different Points in Time



Source: Information on cumulative offset use is from monthly extracts from SSA's MBR as of July 2017. Information on cumulative adjustments is from BTS, BSAS, and MBR data.

Note: Each line shows the number of offset users, defined as treatment subjects who completed the TWP and GP and then earned above BYA in at least one month, based on administrative records through December 2016. As a result of delays in beneficiary reporting and in SSA's work CDR processing, the number of offset users known at a given point in time was incomplete. For example, by May 2017, about 2,500 subjects were known to have earnings that qualified for the benefit offset between May 2011 and May 2013. SSA had identified nearly half (48 percent) of these offset users by May 2013, and the majority (68 percent) by May 2014. However, SSA continued to identify offset use in the period through 2017.

Exhibit E-8. Stage 2 Offset Users' Understanding of How Earnings Affect Benefits, Before and After Initial Benefit Adjustment

Assignment Group	Offset Users Who Demonstrated an Understanding of Benefit Adjustment Consistent with Offset Rules (%)		
	Wave: At 12-Month Survey	Wave: At 36-Month Survey	Difference in Understanding Between 12 Months and 36 Months
Sample: Initial Benefit Adjustment Between 12-Month and 36-Month Survey Dates			
T21	43.9	47.2	3.3
T22	55.5	49.2	-6.3

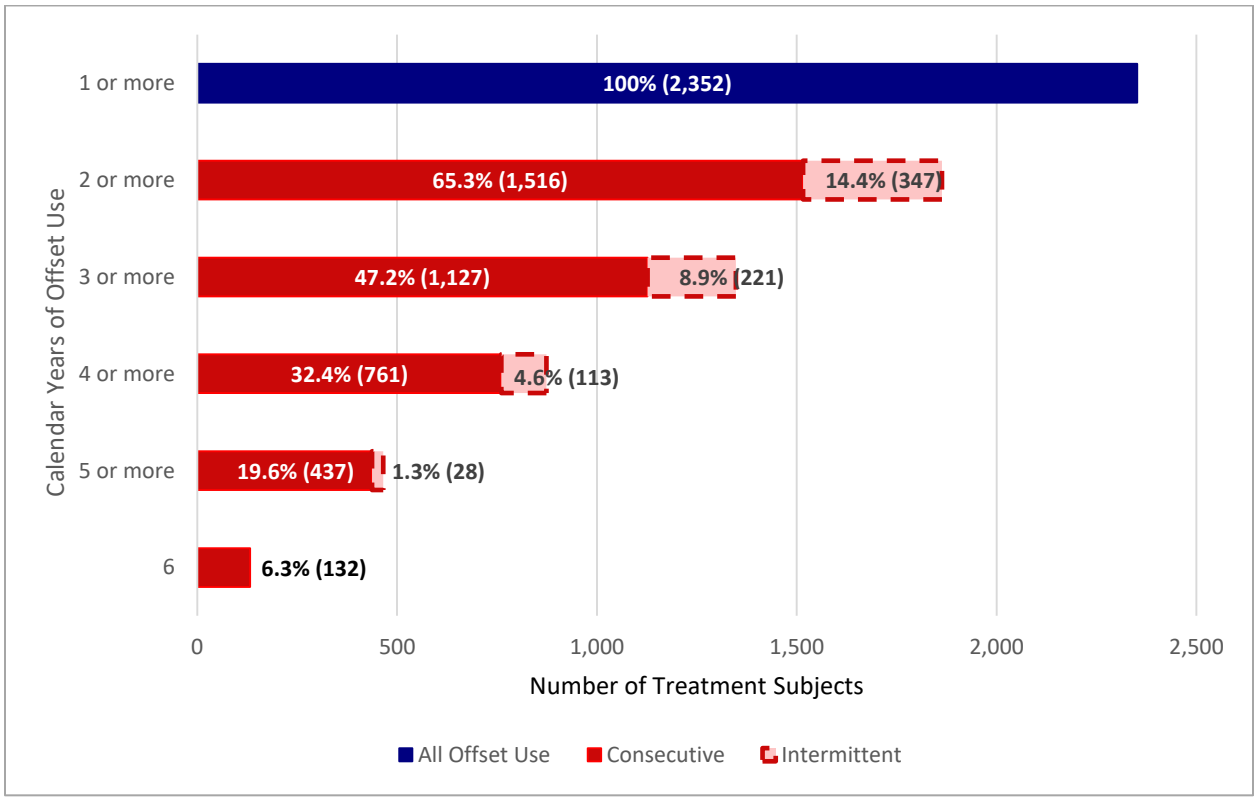
Source: BOND Stage 2 12-Month and 36-Month Surveys and BTS records.

Note: This table compares offset users' understanding of the offset before and after receipt of the first benefit adjustment. The differences in understanding at these two points in time were not statistically significant. We identified offset users who demonstrated an understanding of benefit adjustment consistent with offset rules based on their survey responses. The 12- and 36-month surveys asked respondents how their monthly disability cash benefits would change if they were to earn more than the SGA limit after the Trial Work Period (TWP). We categorized as 'demonstrating an understanding' those offset users whose response indicated that benefits would be reduced but not to $0. Sample restricted to Stage 2 subjects with offset use before 36-month survey date who responded to both 12-month and 36-month surveys.

Sample Sizes: Offset adjustment occurred between 12-month and 36-month surveys: T21=281, T22=169.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a paired t-test.

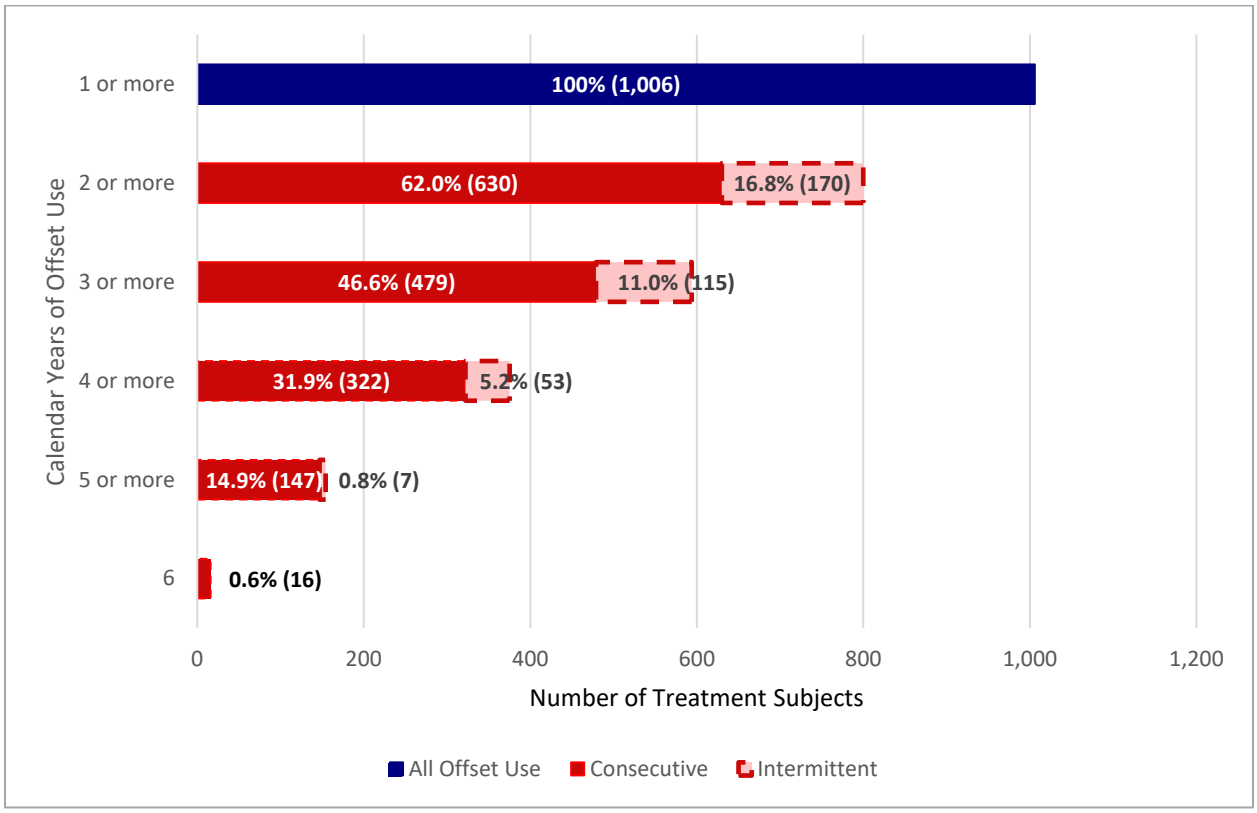
Exhibit E-9. Calendar Years of Offset Use for Stage 1 Treatment Subjects with First Use Observed in 2014 or Earlier, as of December 2016



Source: BTS records.

Note: The sample consists of the 2,352 T1 users whose first calendar year of offset use was 2011 through 2014, according to administrative records through December 2016. Thus far, we have observed their offset use for three to six years, depending on the first calendar year of offset use. For this reason we used dashed outlines to identify bars that would be larger if we had already observed all cases for six years starting with the first year off offset use, but by unknown amounts. Starting with the "2 or more" bar, all users in each bar are a subset of users in the bar above it. All percentages are weighted, so they represent estimates for the national beneficiary population represented in Stage 1. The number of users with first use during the 2011-2014 period may increase as SSA makes retroactive adjustments. Also, 59 known T1 users were excluded from this analysis because the BTS was missing information on their years of offset use.

Exhibit E-10. Calendar Years of Offset Use for Stage 2 Treatment Subjects with First Use Observed in 2014 or Earlier, as of December 2016



Source: BTS records.

Note: The sample consists of the 1,006 Stage 2 offset users whose first calendar year of offset use was 2011 through 2014, according to administrative records through December 2016. Thus far, we have observed their offset use for three to six years, depending on the first calendar year of offset use. For this reason we used dashed outlines to identify bars that would be larger if we had already observed these cases for six years starting with the first year off offset use, but by unknown amounts. Starting with the "2 or more" bar, all users in each bar are a subset of users in the bar above it. All percentages are weighted, so they represent estimates for the national population of SSDI-only beneficiaries who would volunteer for study enrollment. The number of users with first use during the 2011-2014 period may increase as SSA makes retroactive adjustments. Also, 28 T21 offset users and 12 T22 offset users were excluded from this analysis because the BTS was missing information on their years of offset use.

Exhibit E-11. Stage 1 Treatment Subject Characteristics by Steps Toward Benefit Offset Adjustment (through December 2016)

Baseline Characteristic	Non-Offset User, No Cessation Date[a] (1)	Non-Offset User, with Cessation Date[a] (2)	Benefit Offset Adjustment by December 2016 (3)	P-value
Number of Beneficiaries	***71,893***	***2,306***	***2,898***	
Gender				
Male (%)	51.6	51.1	51.4	0.941
Female (%)	48.4	48.9	48.6	
Age				
20–29 years (%)	6.1	8.7	16.0	0.000***
30–39 years (%)	12.3	23.1	25.5	
40–44 years (%)	10.5	14.1	14.9	
45–49 years (%)	16.9	18.2	14.9	
50–54 years (%)	23.8	19.7	16.5	
Over age 55 (%)	30.5	16.2	12.1	
Mean age (years)	48.0	44.3	41.6	0.000***
Primary Impairment				
Neoplasms (%)	2.6	2.5	4.3	0.000***
Mental Disorders (%)	30.6	40.3	36.0	
Back or Other Musculoskeletal (%)	23.2	16.6	18.4	
Nervous System Disorders (%)	7.3	5.7	5.6	
Circulatory System Disorders (%)	6.0	3.7	4.3	
Genitourinary System Disorders (%)	1.7	2.4	3.5	
Injuries (%)	4.3	4.9	5.1	
Respiratory (%)	2.0	1.3	1.2	
Severe Visual Impairments (%)	1.9	1.7	1.9	
Digestive System (%)	1.6	1.5	1.8	
Other Impairments (%)	18.7	19.6	18.0	
Length of SSDI Receipt				
Short duration (36 months or less) (%)	30.4	17.4	35.1	0.000***
Number of years received SSDI	8.4	9.5	6.1	0.000***
Benefit Amount and Status				
Monthly SSDI benefits ($)	996.3	988.9	1,021.0	0.043**
AIME (May 2011) ($)	1,601.8	1,486.4	1,792.0	0.000***
Disabled adult child (DAC) (%)	13.4	5.2	7.5	0.000***
Disabled widow beneficiary (DWB) (%)	1.8	0.6	0.3	0.000***
Dually entitled DAC (%)	2.3	2.0	2.3	0.548
Dually entitled DWB (%)	0.9	0.5	0.2	0.000***
Payee is other than self (%)	18.8	13.9	10.9	0.000***
SSDI-only	81.5	87.1	85.8	0.000***
Concurrent	18.5	12.9	14.2	0.000***

Source: SSA administrative records from the BTS (August 2017) and MBR.

Notes: p-values shown are from statistical tests of differences in percentages across the three groups. Groups of mutually exclusive characteristics were tested for differences with chi-squared tests. Single characteristics not part of a mutually exclusive group were tested for differences by F-tests. The chi-squared statistic from an omnibus statistical test of difference between groups across all characteristics is 313,977.02 with a p-value of 0.000***. Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

[a] Benefit adjustments under the offset rules are possible only after SSA has determined that a beneficiary has engaged in SGA after the TWP (i.e., identified a cessation date for the beneficiary).

Sample size: 77,097

***/**/* indicate statistical significance at the 0.01/0.05/0.10 levels.

Exhibit E-12. Predictors of Benefit Offset Adjustment for Stage 1 Treatment Subjects through December 2016

Predictor of Benefit Offset Adjustment	Coefficient (1)	Standard Error (2)	P-value
Gender			
Male	-0.26	0.22	0.261
Female	--	--	--
Age			
20–29 years	10.39	0.78	0.000***
30–39 years	6.98	0.63	0.000***
40–44 years	4.38	0.50	0.000***
45–49 years	2.21	0.30	0.000***
50–54 years	1.30	0.26	0.001***
Over age 55	--	--	--
Primary Impairment			
Neoplasms	1.04	0.71	0.174
Mental Disorders	-0.58	0.39	0.173
Back or Other Musculoskeletal	-1.38	0.35	0.004***
Nervous System Disorders	-2.13	0.30	0.000***
Circulatory System Disorders	-1.36	0.53	0.029**
Genitourinary System Disorders	1.41	0.84	0.125
Injuries	-0.56	0.40	0.193
Respiratory	-1.75	0.46	0.004***
Severe Visual Impairments	-1.29	0.43	0.014**
Digestive System	-0.61	0.45	0.209
Other Impairments	--	--	--
Length of SSDI Receipt			
Short duration (36 months or less)	-0.34	0.22	0.148
Number of years received SSDI	0.01	0.02	0.717
Benefit Amount and Status			
Monthly SSDI benefits ($1,000)	-0.31	0.91	0.743
AIME (May 2011) ($1,000)	0.58	0.37	0.150
Disabled adult child (DAC)	-3.38	0.67	0.001***
Disabled widow beneficiary (DWB)	-0.77	0.60	0.232
Payee is other than self	-2.37	0.54	0.002***
SSDI-only	1.47	0.43	0.007***

Source: SSA administrative records from the BTS (August 2017) and MBR.

Notes: The model was estimated using a linear regression model, with standard errors that are robust to heteroskedasticity and to clustering by site. Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

The outcome variable is an indicator of whether the recipient has at least one month of offset use through December 2016. Adjusted R-squared: 0.03, Model F-statistic is 18.40, p-value 0.000***.

Unweighted sample size: 77,097

***/**/* indicate statistical significance at the 0.01/0.05/0.10 levels.

Exhibit E-13. Combined T21 and T22 Characteristics by Steps towards Benefit Offset Adjustment (through December 2016)

Baseline Characteristic	Non-offset User, No Cessation Date[a] (1)	Non-offset User, With Cessation Date[a] (2)	Benefit Offset Adjustment by 12/31/16 (3)	P-value
Number of Beneficiaries	**6,029**	**628**	**1,238**	
Gender				
Male	49.0	45.2	46.2	0.131
Female	51.0	54.8	53.8	
Age				
20–29 years	4.2	5.7	8.7	0.000***
30–39 years	12.9	20.6	19.8	
40–44 years	11.0	15.0	15.2	
45–49 years	17.0	17.0	17.4	
50–54 years	24.8	22.1	19.2	
Over age 55	30.2	19.7	19.6	
Mean age (years)	48.4	45.8	45.0	0.000***
Primary Impairment				
Neoplasms	3.5	2.4	4.3	0.000***
Mental Disorders	32.9	42.8	35.2	
Back or Other Musculoskeletal	23.7	18.9	21.1	
Nervous System Disorders	6.6	4.9	7.1	
Circulatory System Disorders	6.7	3.4	4.3	
Genitourinary System Disorders	3.0	3.4	2.7	
Injuries	4.2	4.4	6.5	
Respiratory	2.3	1.5	1.7	
Severe Visual Impairments	3.2	2.3	2.2	
Digestive System	1.8	1.9	2.7	
Other Impairments	12.2	14.1	12.2	
Length of SSDI Receipt				
Short duration (36 months or less)	44.5	23.2	42.8	0.000***
Number of months received SSDI	73.8	97.2	71.8	0.000***
Benefit Amount and Status				
Monthly SSDI Benefits ($)	1,071.6	1,064.4	1,121.5	0.019**
AIME (May 2011) ($)	1,777.0	1,685.0	1,969.4	0.004***
Disabled adult child (DAC)	4.2	2.9	2.3	0.004***
Disabled widow beneficiary (DWB)	1.1	0.5	0.6	0.324
Dually-entitled disabled adult child	1.2	1.6	1.3	0.619
Dually-entitled disabled widow beneficiary	0.5	0.5	0.5	0.950
Payee is other than self	8.5	7.9	6.7	0.147

Baseline Characteristic	Non-offset User, No Cessation Date[a] (1)	Non-offset User, With Cessation Date[a] (2)	Benefit Offset Adjustment by 12/31/16 (3)	P-value
Local Characteristics				
County unemployment rate (April 2011)	8.6	8.5	8.3	0.048**
County employment rate for people with a disability (2010)	34.5	35.5	35.7	0.025**
Employment Status at Baseline				
Working for pay	17.0	36.9	59.7	0.000***
Looking for work	22.3	26.8	21.3	0.000***
Education				
Less than a 2-year postsecondary degree	69.2	64.2	59.1	0.000***
2- or 3-year postsecondary degree	15.2	16.4	17.0	
Bachelor's degree or higher	15.6	19.4	23.9	
Health Status at Baseline				
Health is fair or poor	66.4	60.0	54.5	0.000***
Health is good or very good	33.6	40.0	45.5	

Source: SSA administrative records from the BTS (August 2017) and MBR and the Stage 2 Baseline Survey.

Note: p-values shown are from statistical tests of differences in percentages across the three groups. Groups of mutually-exclusive characteristics were tested for differences with chi-squared tests. Single characteristics not part of a mutually-exclusive group were tested for differences by F-tests. The Chi-squared statistic from omnibus statistical test of difference between groups across all characteristics is 33,928.66, with a p-value of 0.000***. Weights are used to ensure that the BOND subjects who met analysis criteria are representative the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

[a] Benefit adjustments under the offset rules are possible only after SSA has determined that a beneficiary has engaged in SGA after the TWP (i.e., identified a cessation date for the beneficiary).

Unweighted sample size: T21: 4,854; T22: 3,041

***/**/* indicate statistical significance at the 0.01/0.05/0.10 levels.

Exhibit E-14. Predictors of Benefit Offset Adjustment for Combined Stage 2 Treatment Subjects (T21 and T22) through December 2016

Predictor of Benefit Offset Adjustment	Coefficient (1)	Standard Error (2)	P-value
Gender			
Male	-0.85	0.78	0.304
Female	--	--	--
Age			
20–29 years	16.31	3.88	0.002***
30–39 years	9.65	2.26	0.002***
40–44 years	7.83	2.09	0.005***
45–49 years	4.94	1.86	0.026**
50–54 years	1.24	0.85	0.178
Over age 55	--	--	--
Primary Impairment			
Neoplasms	1.33	2.72	0.637
Mental Disorders	-0.36	1.73	0.838
Back or Other Musculoskeletal	1.63	1.24	0.223
Nervous System Disorders	-0.35	1.91	0.858
Circulatory System Disorders	-0.75	2.34	0.756
Genitourinary System Disorders	-4.03	2.30	0.113
Injuries	6.20	1.99	0.012**
Respiratory	0.67	3.17	0.837
Severe Visual Impairments	-6.29	3.40	0.097*
Digestive System	6.69	4.82	0.198
Other Impairments	--	--	--
Length of SSDI Receipt			
Short duration (36 months or less)	1.72	0.84	0.072*
Number of months received SSDI	0.01	0.01	0.376
Benefit Amount and Status			
Monthly SSDI benefits ($1,000)	-0.70	1.39	0.627
AIME (May 2011) ($1,000)	2.19	0.48	0.001***
Disabled adult child (DAC)	-11.79	2.17	0.000***
Disabled widow beneficiary (DWB)	3.13	1.96	0.145
Payee is other than self	-6.55	0.83	0.000***
Local Characteristics			
County unemployment rate (April 2011)	0.03	0.25	0.898
County employment rate for people with a disability (2010)	0.03	0.02	0.257
Employment Status at Baseline			
Working for pay	29.23	1.90	0.000***
Looking for work	7.50	1.50	0.001***
Not working for pay or looking for work	--	--	--

Predictor of Benefit Offset Adjustment	Coefficient (1)	Standard Error (2)	P-value
Education			
2- or 3-year postsecondary degree	0.15	0.94	0.880
Bachelor's degree or higher	2.52	1.01	0.034**
Less than a 2-year postsecondary degree	--	--	--
Health Status at Baseline			
Health is fair or poor	-3.53	1.03	0.008***
Health is good or very good	--	--	--

Source: SSA administrative records from the BTS (August 2017) and MBR and the Stage 2 Baseline Survey.

Notes: The model was estimated using a clustered linear regression model. The outcome variable is an indicator of whether the recipient has at least one month of offset use through December 2016. Adjusted R-Squared: 0.14. Model F-statistic is 25.98, p-value 0.000***. Weights are used to ensure that the BOND subjects who met analysis criteria are representative the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Sample size: T21: 4,854; T22: 3,041

***/**/* indicate statistical significance at the 0.01/0.05/0.10 levels.

Exhibit E-15. Prevalence of Overpayments among T1 Subjects in 2011, 2012, 2013, 2014, and 2015

Period	T1 Subjects with Overpayment (%)	Mean Overpayment in Period for T1 Subjects	T1 Offset Users with Overpayment (%)	Mean Overpayment in Period for T1 Subjects with Overpayment in Period
May–December 2011	0.79	$23	63.2	$2,882
January–December 2012	1.29	$54	73.3	$4,171
January–December 2013	1.48	$56	71.9	$3,803
January–December 2014	1.62	$55	67.0	$3,399
January–December 2015	1.69	$63	65.5	$3,712
May 2011–December 2015	3.42	$250	89.3	$7,317

Source: SSA administrative records from the DBAD (monthly extracts from May 2011 to December 2015 and May 2017) and MBR.

Notes: Values in the first two columns are regression-adjusted for baseline characteristics and are weighted to ensure that the samples are representative of the national disabled-worker beneficiary population. The percentages in the third column are for offset users only. We calculated results in the fourth column as the second column divided by the first column. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes for T1 subjects in 2015 = 65,127. Sample sizes were marginally different in earlier years, see section E.1.1. The sample size for the combined May 2011-December 2015 statistics is the union of the annual samples: 65,127.

Unweighted sample sizes for T1 offset users: 2011 = 740; 2012 = 1,120; 2013 = 1,371; 2014 = 1,603; 2015 = 1,737.

Exhibit E-16. Overpayments to T1 Offset Users in May 2011 to December 2015, Before and After Month of First Offset Adjustment

Period	T1 Offset Users with Overpayment in Any Month (%)	Mean Number of Months in Offset	Mean Percentage of Months in Offset with Overpayment (%)	Mean Monthly Overpayment for T1 Offset Users in Overpayment Months
Period before month of first offset adjustment[1]	83.4	17.5	69.4	$505
Period after month of first offset adjustment	58.0	16.8	43.3	$331

Source: SSA administrative records from the BTS (extracted May 31, 2017) and DBAD (monthly extracts from May 2011 to December 2015 and May 2017).

Note: We estimate overpayments starting in May 2011, the first month in which T1 subjects used the offset. Treatment subjects are only at risk of overpayments in months in which they used the offset. The period before the first offset adjustment is defined as the time between first month of offset use and the first offset adjustment, and the period after the first offset adjustment is defined as the time between the first offset adjustment and the end of the observed period (December 2015). All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

[1] Includes the first month of offset adjustment.

Unweighted sample size: T1 offset users = 1,254, including 1,108 with an overpayment in at least one month. Sample is limited to T1 subjects in the overpayment analysis sample with documented offset use before and after their initial benefit adjustment.

Exhibit E-17. Prevalence of Overpayments among Stage 2 Treatment Subjects by Treatment Group in 2012, 2013, 2014, and 2015

Period	Stage 2 Treatment Subjects with Overpayment (%)	Mean Overpayment in Period for Stage 2 Treatment Subjects	Stage 2 Offset Users with Overpayment (%)	Mean Overpayment in Period for Stage 2 Subjects with Overpayment in Period
Stage 2 Treatment Subjects				
January–December 2012	5.1	$134	76.3	$2,625
January–December 2013	6.8	$203	79.6	$3,000
January–December 2014	6.6	$192	78.1	$2,900
January–December 2015	7.0	$224	62.4	$3,196
January 2012–December 2015	13.3	$753	92.1	$5,662
T21 Subjects				
January–December 2012	5.3	$150	79.3	$2,826
January–December 2013	7.0	$224	80.9	$3,206
January–December 2014	6.9	$210	70.8	$3,029
January–December 2015	7.5	$252	68.1	$3,357
January 2012–December 2015	13.8	$837	91.2	$6,068
T22 Subjects				
January–December 2012	5.2	$112	80.2	$2,138
January–December 2013	6.8	$165	73.7	$2,417
January–December 2014	6.5	$184	62.4	$2,839
January–December 2015	6.5	$186	61.8	$2,848
January 2012–December 2015	13.5	$646	92.2	$4,797

Source: SSA administrative records from the DBAD (monthly extracts from January 2012 to December 2015 and May 2017).

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. The percentages in the third column are for offset users only and are weighted. We calculated results in the fourth column as the second column divided by the first column. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes for T21 subjects in 2015 = 4,467; T22 subjects in 2015 = 2,787. Sample sizes were marginally different in earlier years, see section E.1.1. The sample size for the combined January 2012-December 2015 statistics is the union of the annual samples: T21 = 4,467; T22 = 2,787.

Unweighted sample sizes for T21 offset users: 2011 = 50; 2012 = 285; 2013 = 398; 2014 = 453; 2015 = 484. Unweighted sample sizes for T22 offset users: 2011 = 38; 2012 = 155; 2013 = 250; 2014 = 282; 2015 = 294.

Exhibit E-18. Overpayments to Stage 2 Offset Users in January 2012 to December 2015, Before and After Month of First Offset Adjustment

Period	Stage 2 Offset Users with Overpayment in Any Month (%)	Mean Number of Months in Offset	Mean Percentage of Months in Offset with Overpayment (%)	Mean Monthly Overpayment for Stage 2 Offset Users in Overpayment Months
Period before month of first offset adjustment[1]	87.7	12.2	73.3	$404
Period after month of first offset adjustment	67.0	17.7	49.4	$256

Source: SSA administrative records from the BTS (extracted May 31, 2017) and DBAD (monthly extracts from January 2012 to December 2015 and May 2017).

Note: We estimate overpayments starting in January 2012, one of the first months in which T21 and T22 subjects used the offset. Treatment subjects are only at risk of overpayments in months in which they used the offset. The period before the first offset adjustment is defined as the time between first month of offset use and the first offset adjustment, and the period after the first offset adjustment is defined as the time between the first offset adjustment and the end of the observed period (December 2015). All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

[1] Includes the first month of offset adjustment.

Unweighted sample size: Stage 2 offset users = 557, including 514 with an overpayment in at least one month. Sample is limited to T21 and T22 subjects in the overpayment analysis sample with documented offset use before and after their initial benefit adjustment.

Exhibit E-19. Estimated Impacts on Overpayments among Stage 1 Subjects in 2011, 2012, 2013, 2014, and 2015

Outcome	T1 Mean	C1 Mean	Impact Estimate
Percentage of Beneficiaries with Overpayment			
Overpaid in any month in 2011 (%)	0.79	0.92	-0.13** (0.04)
Overpaid in any month in 2012 (%)	1.29	1.07	0.21*** (0.05)
Overpaid in any month in 2013 (%)	1.48	1.03	0.45*** (0.06)
Overpaid in any month in 2014 (%)	1.62	1.04	0.58*** (0.09)
Overpaid in any month in 2015 (%)	1.69	1.03	0.66*** (0.13)
Overpaid in any month in 2011, 2012, 2013, 2014, or 2015 (%)	3.42	2.74	0.68*** (0.11)
Mean Overpayment Amount for All Beneficiaries			
Total 2011 overpayment	$23	$52	-$29*** ($4)
Total 2012 overpayment	$54	$75	-$21*** ($3)
Total 2013 overpayment	$56	$73	-$17*** ($3)
Total 2014 overpayment	$55	$73	-$18*** ($4)
Total 2015 overpayment	$63	$76	-$14** ($5)
Combined 2011, 2012, 2013, 2014, and 2015 overpayment	$250	$348	-$98*** ($14)

Source: SSA administrative records from the DBAD (monthly extracts from January 2012 to December 2015 and May 2017) and MBR.

Note: We estimate overpayments starting in May 2011. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Unweighted sample sizes for 2015: T1 = 65,127, C1 = 716,354. Sample sizes were marginally different in earlier years, see section E.1.1. The sample size for the combined May 2011-December 2015 statistics is the union of the annual samples: T1 = 65,127, C1 = 716,403.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit E-20. Estimated Impacts on Overpayments among Stage 2 Subjects in 2012, 2013, 2014, and 2015

Outcome	T21 Mean	T22 Mean	T21+T22 Mean	C2 Mean	Estimated Impact of Offset vs. Current Law (T21+T22 vs. C2)	Estimated Impact of EWIC vs. WIC (T22 vs. T21)
Percentage of Beneficiaries with Overpayment						
Overpaid in any month in 2012 (%)	5.3	5.2	5.1	3.6	1.5** (0.52)	-0.1 (0.59)
Overpaid in any month in 2013 (%)	7.0	6.8	6.8	3.9	2.9*** (0.52)	-0.2 (0.65)
Overpaid in any month in 2014 (%)	6.9	6.5	6.6	3.7	2.9*** (0.53)	-0.5 (0.64)
Overpaid in any month in 2015 (%)	7.5	6.5	7.0	3.2	3.8*** (0.48)	-1.0 (0.81)
Overpaid in any month in 2012, 2013, 2014, or 2015 (%)	13.8	13.5	13.3	8.6	4.7*** (0.76)	-0.3 (0.88)
Mean Total Overpayment Amount for All Beneficiaries						
2012 total overpayment	$150	$112	$134	$205	$-70* (32)	$-38 (26)
2013 total overpayment	$224	$165	$203	$303	$-100** (35)	$-60* (27)
2014 total overpayment	$210	$184	$192	$253	$-61 (34)	$-27 (27)
2015 total overpayment	$252	$186	$224	$270	$-46 (38)	$-66* (35)
Combined 2012, 2013, 2014, and 2015 overpayment	$837	$646	$753	$1,030	$-277** (94)	$-191** (81)

Source: SSA administrative records from the DBAD (monthly extracts from January 2012 to December 2015 and May 2017) and MBR and the Stage 2 Baseline Survey.

Note: We estimate overpayments starting in January 2012. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Unweighted sample sizes for 2015: T1 = 4,468, T22 = 2,787, C2 = 4,447. Sample sizes were marginally different in earlier years, see section E.1.1. The sample size for the combined January 2012-December 2015 statistics is the union of the annual samples: T21 = 4,468, T22 = 2,787, C2 = 4,450.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Appendix F. Additional Results Related to Chapter 5: Impacts on Earnings, SSDI Benefits, and Other Outcomes

Exhibit F-1. Estimated Impacts on Annual Earnings and Employment: T1 Versus C1

Year of Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
Earnings ($ in year)				
2011	$1,172	$1,195	$-24	$19
2012	$1,236	$1,241	$-5	$24
2013	$1,309	$1,299	$10	$23
2014	$1,395	$1,379	$16	$28
2015	$1,520	$1,508	$12	$26
Employment (% in year)				
2011	14.22	14.10	0.12	0.11
2012	13.67	13.52	0.15	0.12
2013	13.51	13.33	0.18	0.12
2014	13.21	12.93	0.29*	0.13
2015	13.25	12.99	0.26*	0.13
Earnings above BYA (% in year)				
2011	2.24	2.26	-0.02	0.09
2012	2.46	2.42	0.03	0.09
2013	2.65	2.54	0.11	0.07
2014	2.90	2.69	0.20**	0.07
2015	3.23	2.97	0.27***	0.07
Earnings above 2x BYA (% in year)				
2011	0.92	0.96	-0.04	0.05
2012	1.03	1.09	-0.06	0.05
2013	1.13	1.18	-0.06	0.04
2014	1.23	1.29	-0.06	0.04
2015	1.31	1.44	-0.13**	0.05
Earnings above 3x BYA (% in year)				
2011	0.50	0.53	-0.03	0.03
2012	0.56	0.61	-0.05	0.03
2013	0.62	0.65	-0.03	0.03
2014	0.64	0.72	-0.07*	0.03
2015	0.71	0.80	-0.09**	0.04

Source: SSA administrative records from the MEF and MBR.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-2. Estimated Impacts on Annual SSDI Benefits Due: T1 Versus C1

Year of Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
SSDI Benefits Due ($ for Year)				
2011 (May-Dec.)	$7,929	$7,885	$43***	$10
2012	$11,844	$11,742	$102***	$17
2013	$11,636	$11,490	$146***	$23
2014	$11,386	$11,220	$166***	$26
2015	$11,360	$11,180	$180***	$23
Number of Months with SSDI Payments Due				
2011 (May-Dec.)	7.47	7.42	0.05***	<0.01
2012	11.02	10.89	0.13***	0.01
2013	10.78	10.61	0.17***	0.02
2014	10.55	10.35	0.20***	0.02
2015	10.30	10.08	0.22***	0.02
Any SSDI Benefits Due (% in Year)				
2011 (May-Dec.)	94.62	93.99	0.63***	0.11
2012	93.32	92.54	0.78***	0.11
2013	91.23	90.17	1.06***	0.16
2014	89.22	87.94	1.28***	0.19
2015	87.27	85.67	1.60***	0.18

Source: SSA administrative records from the MBR.

Notes: Benefit outcomes are based on benefits paid during the May 2011- December 2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-3. Annual Impacts on SSI Benefits Due: T1 Versus C1

Year of Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
SSI Benefits Due ($ for Year)				
2011	$302	$299	$3	$5
2012	$441	$441	$0	$8
2013	$423	$429	$-5	$8
2014	$403	$407	$-4	$8
2015	$375	$377	$-1	$7
Number of Months with SSI Payments Due				
2011	1.35	1.36	-0.01	<0.01
2012	1.96	1.97	-0.01	0.01
2013	1.88	1.90	-0.02	0.01
2014	1.79	1.81	-0.02	0.01
2015	1.66	1.67	-0.01	0.02
Any SSI Benefits Due (% in Year)				
2011	18.01	18.01	0.00	0.07
2012	17.64	17.71	-0.08	0.09
2013	16.89	16.96	-0.06	0.09
2014	16.08	16.28	-0.20	0.13
2015	14.76	14.90	-0.14	0.13

Source: SSA administrative records from the SSR and MBR.

Notes: Benefit outcomes are based on benefits paid during the May 2011- December 2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-4. Annual Impacts on SSDI Benefits Due Compared to SSDI Benefits Paid: T1 Versus C1

Outcome	SSDI Benefits Due			SSDI Benefits Paid[a]			Difference in Impact
	Treatment Mean	Control Mean	Impact Estimate	Treatment Mean	Control Mean	Impact Estimate	
Total SSDI Benefits in May 2011-Dec. 2015	$54,155	$53,517	$638*** ($86)	$53,903	$53,407	$496*** ($83)	$142 ($120)
SSDI Benefits in May 2011 – Dec. 2011	$7,929	$7,885	$43*** ($10)	$7,957	$7,934	$23* ($12)	$20 ($15)
SSDI Benefits in 2012	$11,844	$11,742	$102*** ($17)	$11,788	$11,721	$67*** ($17)	$35 ($25)
SSDI Benefits in 2013	$11,636	$11,490	$146*** ($23)	$11,606	$11,470	$135*** ($23)	$11 ($32)
SSDI Benefits in 2014	$11,386	$11,220	$166*** ($26)	$11,295	$11,167	$128*** ($28)	$38 ($38)
SSDI Benefits in 2015	$11,360	$11,180	$180*** ($23)	$11,257	$11,115	$142*** ($24)	$38 ($33)

Source: SSA administrative records from the MBR and PHUS.

Sample Sizes: T1 = 77,101; C1 = 891,429.

Notes: See Appendix A for definitions of SSDI benefits due and SSDI benefits paid. Standard errors are in parentheses. Impact estimates are regression-adjusted for baseline characteristics. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

[a] In earlier versions of BOND reports, hypothesis tests for SSDI benefits paid were designated as confirmatory and thus were adjusted for multiple comparisons. For this table, hypothesis tests for these outcomes were not adjusted for multiple comparisons. The confirmatory hypothesis tests in this Final Evaluation Report concern cumulative measures rather than annual measures.

Exhibit F-5. Annual Impacts on SSDI Benefits Paid: T1 Versus C1

Year of Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
SSDI Benefits Paid ($ for Year)				
2011	$7,957	$7,934	$23*	$12
2012	$11,788	$11,721	$67***	$17
2013	$11,606	$11,470	$135***	$23
2014	$11,295	$11,167	$128***	$28
2015	$11,257	$11,115	$142***	$24
Number of Months with SSDI Payments (Benefits Paid Measure)				
2011	7.49	7.49	0.00	<0.01
2012	11.03	10.98	0.05***	0.01
2013	10.78	10.69	0.09***	0.01
2014	10.50	10.40	0.10***	0.02
2015	10.25	10.12	0.13***	0.02
Any SSDI Benefits (Benefits Paid Measure) (% in Year)				
2011	95.04	94.96	0.08	0.10
2012	93.58	93.32	0.26**	0.11
2013	91.52	90.88	0.63***	0.14
2014	89.18	88.41	0.77***	0.14
2015	87.15	86.07	1.08***	0.16

Source: SSA administrative records from the PHUS and MBR.

Notes: Benefit outcomes are based on benefits paid during the May 2011- December 2015 period, and are not corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-6. Annual Impacts on SSI Benefit Paid Receipt: T1 Versus C1

Year of Outcome	T1 Mean	C1 Mean	Impact Estimate	Standard Error
SSI Benefits Paid ($ for Year)				
2011	$358	$357	$0	$6
2012	$473	$476	$-3	$8
2013	$447	$452	$-5	$8
2014	$419	$425	$-5	$8
2015	$385	$389	$-4	$7
Number of Months with SSI Payments (Benefits Paid Measure)				
2011	1.37	1.38	-0.01	<0.01
2012	1.98	1.99	-0.01	0.01
2013	1.90	1.91	-0.01	0.01
2014	1.81	1.82	-0.02	0.01
2015	1.68	1.69	-0.01	0.01
Any SSI Receipt (Benefits Paid Measure) (% in Year)				
2011	18.55	18.61	-0.05	0.07
2012	17.87	17.95	-0.08	0.09
2013	17.10	17.15	-0.05	0.10
2014	16.25	16.44	-0.19	0.11
2015	14.89	15.07	-0.18	0.13

Source: SSA administrative records from the SSR and MBR.

Notes: Benefit outcomes are based on benefits paid during the May 2011- December 2015 period, and are not corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-7. Annual Impacts on Earnings and Employment for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs T21 SE
Earning ($ in year)									
2011	$3,251	$3,387	$3,053	$198*	$105	$334	$192	$136	$129
2012	$4,040	$4,098	$3,683	$356*	$165	$415	$277	$58	$195
2013	$4,396	$4,381	$3,993	$403*	$186	$388	$292	$-15	$208
2014	$4,649	$4,619	$4,219	$431*	$210	$400	$306	$-30	$225
2015	$4,924	$5,017	$4,616	$309	$243	$402	$287	$93	$253
Employment (% in year)									
2011	36.54	36.48	35.84	0.70	1.04	0.63	1.20	-0.06	0.89
2012	40.46	40.22	38.59	1.87*	0.86	1.62	1.11	-0.24	1.33
2013	40.16	38.89	37.43	2.73**	0.96	1.45	1.07	-1.27	1.09
2014	38.95	38.55	36.57	2.38**	0.99	1.98	1.12	-0.40	1.14
2015	36.77	37.95	35.59	1.18	1.06	2.36*	1.14	1.18	1.15
Earnings above BYA (% in year)									
2011	7.23	7.50	7.21	0.03	0.46	0.29	0.67	0.26	0.51
2012	10.33	10.09	8.94	1.39**	0.57	1.16	0.74	-0.23	0.67
2013	11.13	11.35	9.09	2.05***	0.62	2.27**	0.74	0.22	0.73
2014	11.80	11.87	9.19	2.60***	0.72	2.68***	0.80	0.08	0.77
2015	12.46	12.82	9.85	2.61***	0.76	2.97***	0.78	0.36	0.81
Earnings above 2x BYA (% in year)									
2011	1.88	2.62	1.96	-0.08	0.28	0.67	0.38	0.75**	0.32
2012	3.31	2.70	2.69	0.62	0.38	0.00	0.37	-0.61	0.39
2013	4.13	3.75	3.57	0.56	0.41	0.18	0.52	-0.38	0.46
2014	4.49	4.24	3.90	0.59	0.44	0.33	0.52	-0.25	0.50
2015	5.07	4.74	4.60	0.48	0.52	0.14	0.52	-0.33	0.54
Earnings above 3x BYA (% in year)									
2011	0.81	0.91	0.58	0.23	0.17	0.33	0.18	0.10	0.20
2012	1.15	1.42	1.00	0.15	0.21	0.42	0.37	0.27	0.25
2013	1.55	1.67	1.59	-0.04	0.27	0.08	0.35	0.12	0.30
2014	1.89	1.78	1.93	-0.05	0.31	-0.16	0.36	-0.11	0.34
2015	2.23	2.16	2.27	-0.04	0.38	-0.11	0.43	-0.07	0.37

Source: SSA administrative records from the MEF and MBR and the Stage 2 Baseline Survey.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-8. Annual Impacts on SSDI Benefits Due for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs T21 SE
SSDI Benefits Due ($ for Year)									
2011	$12,877	$12,945	$12,853	$25	$105	$93	$119	$68	$162
2012	$13,110	$13,203	$12,911	$199	$112	$292**	$129	$92	$140
2013	$12,955	$13,019	$12,493	$462***	$133	$526***	$137	$64	$149
2014	$12,678	$12,719	$12,180	$498***	$129	$540***	$145	$42	$180
2015	$12,680	$12,689	$12,048	$632***	$139	$640***	$156	$9	$192
Number of Months with SSDI Payments Due									
2011	11.25	11.23	11.23	0.02	0.06	-0.00	0.07	-0.02	0.06
2012	11.36	11.36	11.12	0.24***	0.06	0.24***	0.07	0.00	0.06
2013	11.27	11.25	10.73	0.54***	0.07	0.52***	0.08	-0.02	0.07
2014	11.06	11.06	10.44	0.62***	0.08	0.62***	0.09	-0.00	0.08
2015	10.84	10.81	10.11	0.73***	0.09	0.70***	0.10	-0.03	0.09
Any SSDI Benefits Due (% in Year)									
2011	96.58	96.71	96.32	0.26	0.41	0.39	0.65	0.13	0.50
2012	96.33	96.14	95.55	0.78	0.49	0.59	0.51	-0.19	0.51
2013	95.40	95.17	92.84	2.56***	0.58	2.33***	0.59	-0.23	0.57
2014	93.64	93.76	89.82	3.82***	0.63	3.94***	0.68	0.12	0.66
2015	92.19	91.99	87.07	5.12***	0.69	4.93***	0.75	-0.20	0.71

Source: SSA administrative records from the MBR and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on SSDI benefits for the 2012-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T21 = 4,854 ,T22 = 3,041 , C2 = 4,849

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-9. Annual Impacts on SSI Benefits Due for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs T21 SE
SSI Benefits Due ($ for Year)									
2011	$90	$93	$84	$6	$11	$9	$12	$3	$13
2012	$35	$26	$25	$10	$8	$1	$8	$-9	$9
2013	$35	$38	$33	$2	$8	$5	$10	$3	$11
2014	$38	$40	$36	$3	$9	$4	$11	$1	$12
2015	$34	$36	$36	$-1	$11	$0	$13	$2	$15
Number of Months with SSI Payments Due									
2011	0.25	0.26	0.23	0.03	0.03	0.03	0.04	0.01	0.03
2012	0.18	0.17	0.15	0.03	0.03	0.02	0.04	-0.01	0.04
2013	0.18	0.23	0.18	0.00	0.03	0.05	0.04	0.04	0.05
2014	0.20	0.22	0.19	0.00	0.03	0.02	0.04	0.02	0.05
2015	0.19	0.19	0.18	0.01	0.03	0.01	0.04	0.00	0.05
Any SSI Benefits Due (% in Year)									
2011	6.09	6.10	5.40	0.69	0.47	0.70	0.56	0.01	0.53
2012	2.12	1.98	1.64	0.48	0.30	0.34	0.37	-0.14	0.40
2013	2.01	2.34	2.08	-0.07	0.32	0.26	0.42	0.32	0.55
2014	2.02	2.16	2.24	-0.23	0.38	-0.09	0.42	0.14	0.49
2015	1.89	1.87	1.85	0.04	0.36	0.02	0.39	-0.02	0.46

Source: SSA administrative records from the SSR and MBR and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on SSI benefits for the 2012-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T21 = 4,854 ,T22 = 3,041 , C2 = 4,849

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

F.1 Impact Estimates for Pooled Stage 2 Treatment Groups Compared to Current Law

Although the main impact analysis (Volume 1, Chapter 5) finds no confirmatory evidence of an effect of the benefit offset on earnings in Stage 2, the near-statistical significance of the results led the evaluation team to add an extra analysis that was not pre-specified in the Evaluation Analysis Plan (Bell et al., 2011). This extra analysis, shown in Exhibit F-10, examines impacts for the pooled T21 + T22 groups versus the C2 group and was expected to have smaller standard errors due to the larger sample size from pooling the treatment groups. The extra analysis is also considered exploratory (with no adjustment for multiple comparisons) and so the results are held to a less rigorous standard of evidence than the confirmatory analysis. The results show that when the pooled Stage 2 treatment groups are compared to the C2 group, the benefit offset has a positive impact on earnings of $1,540 during the follow-up period (equivalent to $385 per year and 9 percent of the control group average). This effect is statistically significant at the 0.10 level. The 95 percent confidence interval implies that, for Stage 2 volunteers, we have a high level of confidence that the effect of the benefit offset relative to current law on total earnings ranges from -$64 to +$834 per year (or -2 percent to +20 percent of the control group average).

Other impact estimates shown in Exhibit F-10 have the same statistical significance as the T21 versus C2 and T22 versus C2 estimates and have magnitudes that average the estimates from these comparisons.

Exhibit F-10. Average Impacts on 2012-2015 Earnings and SSDI Benefits for All Stage 2 Treatment Subjects, Combined, Compared to Current Law

Outcome	Average Outcome with Offset (T21 and T22)	Average Outcome under Current Law (C2)	Average Impact of Offset (T21 and T22 vs. C2)	Standard Error
Earnings Outcomes (January 2012–December 2015)				
Total earnings	$18,050	$16,510	$1,540*	$793
Employment during period (%)	54.90	52.49	2.40**	0.98
Number of years with employment	1.56	1.48	0.08**	0.03
Earnings above BYA during at least one year (%)	19.71	15.99	3.72***	0.85
Number of years with earnings above BYA	0.46	0.37	0.09***	0.02
Earnings above 2x BYA during at least one year (%)	7.35	6.71	0.64	0.51
Number of years with earnings above 2x BYA	0.16	0.15	0.02	0.01
Earnings above 3x BYA during at least one year (%)	3.20	3.06	0.14	0.40
Number of years with earnings above 3x BYA	0.07	0.07	0.00	0.01
Benefit Outcomes (January 2012–December 2015)				
Total SSDI benefits due	$51,503	$49,633	$1,871***	$417
Number of months with SSDI payments due	44.51	42.40	2.11***	0.23
Total SSI benefits due	$141	$129	$12	$25
Number of months with SSI payments due	0.77	0.71	0.07	0.11

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. The impact estimates presented in this table are the average impacts of the benefit offset policy compared to current law for all Stage 2 subjects. These estimates average the T21 versus C2 and T22 versus C2 impact estimates. Because of the larger sample size in this pooled analysis, standard errors are smaller than in either of those two comparisons, providing greater statistical power. This pooled analysis was not pre-specified in the study's Evaluation Analysis Plan and is presented here as an aid to the reader. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T22 + T21 = 7,895 ,C2 = 4,849

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-11. Annual Impacts on SSDI Benefits Due Compared to SSDI Benefits Paid: T21 Versus C2

Outcome	SSDI Benefits Due			SSDI Benefits Paid			Difference in Impact
	T21 Mean	C2 Mean	Impact Estimate	T21 Mean	C2 Mean	Impact Estimate	
Total SSDI Benefits in 2012-2015	$51,423	$49,633	$1,791*** ($463)	$51,532	$50,051	$1,480** ($457)	$310† ($153)
SSDI Benefits in 2011	$12,877	$12,853	$25 ($105)	$13,933	$13,779	$155 ($134)	$-101 ($94)
SSDI Benefits in 2012	$13,110	$12,911	$199 ($112)	$13,209	$12,986	$223 ($133)	$-24 ($69)
SSDI Benefits in 2013	$12,955	$12,493	$462*** ($133)	$13,046	$12,681	$365** ($134)	$97 ($66)
SSDI Benefits in 2014	$12,678	$12,180	$498*** ($129)	$12,637	$12,265	$372** ($128)	$126†† ($55)
SSDI Benefits in 2015	$12,680	$12,048	$632*** ($139)	$12,639	$12,119	$520*** ($138)	$112† ($58)

Source: SSA administrative records from the MBR and PHUS and the Stage 2 Baseline Survey.

Unweighted sample sizes: T21 = 4,854, C2 = 4,849.

Notes: See Appendix A for definitions of SSDI benefits due and SSDI benefits paid. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test

Exhibit F-12. Annual Impacts on SSDI Benefits Due Compared to SSDI Benefits Paid: T22 Versus C2

Outcome	SSDI Benefits Due			SSDI Benefits Paid			Difference in Impact
	T22 Mean	C2 Mean	Impact Estimate	T22 Mean	C2 Mean	Impact Estimate	
Total SSDI Benefits in 2012-2015	$51,630	$49,633	$1,997*** ($529)	$51,653	$50,051	$1,602** ($512)	$396†† ($171)
SSDI Benefits in 2011	$12,945	$12,853	$93 ($119)	$13,960	$13,779	$181 ($143)	$-82 ($98)
SSDI Benefits in 2012	$13,203	$12,911	$292** ($129)	$13,235	$12,986	$249* ($126)	$43 ($67)
SSDI Benefits in 2013	$13,019	$12,493	$526*** ($137)	$13,063	$12,681	$381** ($138)	$144† ($74)
SSDI Benefits in 2014	$12,719	$12,180	$540*** ($145)	$12,688	$12,265	$423** ($142)	$117† ($57)
SSDI Benefits in 2015	$12,689	$12,048	$640*** ($156)	$12,668	$12,119	$549*** ($153)	$92 ($58)

Source: SSA administrative records from the MBR and PHUS and the Stage 2 Baseline Survey.

Unweighted sample sizes: T22 = 3,041, C2 = 4,849.

Notes: See Appendix A for definitions of SSDI benefits due and SSDI benefits paid. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test

Exhibit F-13. Annual Impacts on SSDI Benefits Due Compared to SSDI Benefits Paid: T22 Versus T21

Outcome	SSDI Benefits Due			SSDI Benefits Paid			Difference in Impact
	T22 Mean	T21 Mean	Impact Estimate	T22 Mean	T21 Mean	Impact Estimate	
Total SSDI Benefits in 2012-2015	$51,630	$51,423	$207 ($614)	$51,653	$51,532	$121 ($672)	$85 ($169)
SSDI Benefits in 2011	$12,945	$12,877	$68 ($162)	$13,960	$13,933	$26 ($192)	$18 ($105)
SSDI Benefits in 2012	$13,203	$13,110	$92 ($140)	$13,235	$13,209	$26 ($157)	$67 ($71)
SSDI Benefits in 2013	$13,019	$12,955	$64 ($149)	$13,063	$13,046	$17 ($173)	$47 ($72)
SSDI Benefits in 2014	$12,719	$12,678	$42 ($180)	$12,688	$12,637	$50 ($197)	$-9 ($55)
SSDI Benefits in 2015	$12,689	$12,680	$9 ($192)	$12,668	$12,639	$29 ($193)	$-20 ($59)

Source: SSA administrative records from the MBR and PHUS and the Stage 2 Baseline Survey.

Unweighted sample sizes: T22 = 3,041, T21 = 4,854.

Notes: See Appendix A for definitions of SSDI benefits due and SSDI benefits paid. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test.

Exhibit F-14. Annual Impacts on SSDI Benefits Paid for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs T21 SE
SSDI Benefits Paid ($ for Year)									
2011	$13,933	$13,960	$13,779	$155	$134	$181	$143	$26	$192
2012	$13,209	$13,235	$12,986	$223	$133	$249*	$126	$26	$157
2013	$13,046	$13,063	$12,681	$365**	$134	$381**	$138	$17	$173
2014	$12,637	$12,688	$12,265	$372**	$128	$423**	$142	$50	$197
2015	$12,639	$12,668	$12,119	$520***	$138	$549***	$153	$29	$193
Number of Months with SSDI Payments (Benefits Paid Measure)									
2011	11.23	11.26	11.22	0.00	0.05	0.04	0.06	0.03	0.06
2012	11.45	11.46	11.36	0.09	0.06	0.10	0.07	0.01	0.05
2013	11.26	11.28	11.01	0.25***	0.07	0.26***	0.08	0.01	0.07
2014	10.97	11.07	10.67	0.30***	0.07	0.40***	0.08	0.10	0.08
2015	10.75	10.79	10.31	0.44***	0.08	0.48***	0.09	0.04	0.09
Any SSDI Receipt (Benefits Paid Measure) (% in Year)									
2011	98.20	98.41	98.00	0.20	0.38	0.41	0.41	0.21	0.30
2012	97.39	97.16	97.12	0.27	0.55	0.03	0.55	-0.24	0.40
2013	95.95	96.21	94.17	1.78***	0.49	2.04***	0.61	0.26	0.50
2014	93.68	94.47	91.50	2.18***	0.60	2.98***	0.62	0.80	0.62
2015	92.00	92.34	88.49	3.51***	0.67	3.85***	0.72	0.34	0.70

Source: SSA administrative records from the PHUS and MBR and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2012-2015 period, and are not corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T21 = 4,854 ,T22 = 3,041 , C2 = 4,849

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-15. Annual Impacts on SSI Benefits Paid for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21)	Average Outcome with Offset and EWIC (T22)	Average Outcome under Current Law (C2)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2)	T21 vs C2 SE	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2)	T22 vs C2 SE	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21)	T22 vs T21 SE
SSI Benefits Paid ($ for Year)									
2011	$320	$328	$240	$81**	$34	$88	$51	$7	$56
2012	$54	$55	$39	$15	$11	$16	$15	$1	$16
2013	$43	$49	$37	$6	$9	$12	$12	$6	$14
2014	$47	$42	$34	$13	$11	$8	$11	$-5	$13
2015	$38	$36	$38	$-0	$12	$-2	$12	$-2	$15
Number of Months with SSI Payments (Benefits Paid Measure)									
2011	0.21	0.22	0.20	0.01	0.02	0.02	0.02	0.01	0.03
2012	0.18	0.19	0.17	0.02	0.03	0.03	0.04	0.01	0.04
2013	0.20	0.24	0.19	0.01	0.03	0.05	0.04	0.04	0.05
2014	0.21	0.22	0.19	0.01	0.03	0.03	0.04	0.02	0.05
2015	0.20	0.20	0.17	0.02	0.04	0.02	0.04	-0.00	0.05
Any SSI Receipt (Benefits Paid Measure) (% in Year)									
2011	7.67	7.66	7.27	0.40	0.48	0.39	0.61	-0.01	0.55
2012	2.42	2.40	2.05	0.38	0.33	0.35	0.42	-0.03	0.42
2013	2.33	2.48	2.17	0.16	0.33	0.32	0.43	0.16	0.49
2014	2.20	2.36	2.16	0.04	0.34	0.19	0.42	0.15	0.55
2015	1.94	1.93	1.89	0.05	0.38	0.05	0.39	-0.01	0.39

Source: SSA administrative records from the SSR and MBR and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2012-2015 period, and are not corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: T21 = 4,854 ,T22 = 3,041 , C2 = 4,849

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-16. Estimated Impact of Offset and WIC on Mortality for Stage 1 Subjects

Outcome	T1 Mean	C1 Mean	Impact Estimate
Died between random assignment (May 1, 2011) and December 31, 2015 (%)	9.24	9.26	0.02 (0.12)

Source: SSA administrative records from the Numident and MBR.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimate are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-17. Estimated Impacts on Mortality for Stage 2 Volunteers: All Policy Comparisons

Outcome	Average Outcome with Offset and WIC (T21) (1)	Average Outcome with Offset and EWIC (T22) (2)	Average Outcome under Current Law (C2) (3)	Estimated Impact of Offset + WIC vs Current Law (T21 vs. C2) (4)	Estimated Impact of Offset + EWIC vs Current Law (T22 vs. C2) (5)	Estimated Impact of EWIC instead of WIC Given Offset (T22 vs. T21) (6)
Died between random assignment and December 31, 2015 (%)	5.97	5.47	6.52	-0.55 (0.56)	-1.04 (0.61)	-0.50 (0.65)

Source: SSA administrative records from the Numident and MBR and the Stage 2 Baseline Survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimate are regression-adjusted for baseline characteristics.

Unweighted sample sizes: T21 = 4,854 ,T22 = 3,041 , C2 = 4,849 */**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit F-18. Stage 1 Impact Estimates for Subgroups Defined by Duration of SSDI Receipt

Outcome	Short Duration			Long Duration			Estimated Difference in Impact
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$7,687	$7,754	$-67 ($161)	$6,175	$6,133	$42 ($131)	$-109 ($208)
Employment during period (%)	26.26	26.08	0.19 (0.23)	20.83	20.39	0.44** (0.17)	-0.25 (0.29)
Number of years with employment	0.75	0.74	0.01 (<0.01)	0.65	0.64	0.01* (<0.01)	-0.00 (<0.01)
Earnings above BYA during at least one year (%)	6.79	6.52	0.26* (0.14)	4.95	4.53	0.42** (0.14)	-0.16 (0.19)
Number of years with earnings above BYA	0.16	0.15	0.00 (<0.01)	0.12	0.12	0.01 (<0.01)	-0.00 (<0.01)
Earnings above 2x BYA during at least one year (%)	2.67	2.94	-0.26** (0.09)	1.92	1.92	0.01 (0.08)	-0.27†† (0.12)
Number of years with earnings above 2x BYA	0.07	0.07	-0.01** (<0.01)	0.05	0.05	-0.00 (<0.01)	-0.01† (<0.01)
Earnings above 3x BYA during at least one year (%)	1.50	1.66	-0.16** (0.07)	0.98	1.04	-0.05 (0.05)	-0.11 (0.08)
Number of years with earnings above 3x BYA	0.04	0.04	-0.00* (<0.01)	0.03	0.03	-0.00 (<0.01)	-0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$58,292	$57,829	$463*** ($118)	$52,368	$51,655	$714*** ($110)	$-251 ($161)
Number of months with SSDI payments due	50.09	49.41	0.68*** (0.13)	50.13	49.33	0.81*** (0.09)	-0.12 (0.15)
Total SSI benefits due	$1,628	$1,633	$-5 ($35)	$2,082	$2,090	$-9 ($46)	$3 ($58)
Number of months with SSI payments due	6.68	6.81	-0.13 (0.09)	9.49	9.52	-0.03 (0.07)	-0.10 (0.11)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Short Duration T1 = 38,663; Short Duration C1 = 209,756; Long Duration T1 = 38,438; Long Duration C1 = 681,673.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-19. Stage 1 Impact Estimates for Subgroups Defined by Baseline SSI Status

Outcome	SSDI Only			Concurrent			Estimated Difference in Impact (7)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$7,276	$7,245	$31 ($128)	$3,724	$3,812	$-88 ($153)	$119 ($199)
Employment during period (%)	23.01	22.61	0.40** (0.15)	20.04	19.85	0.19 (0.31)	0.21 (0.34)
Number of years with employment	0.70	0.69	0.01** (<0.01)	0.59	0.59	-0.00 (0.01)	0.02 (0.01)
Earnings above BYA during at least one year (%)	5.93	5.50	0.42** (0.13)	3.60	3.45	0.15 (0.21)	0.27 (0.25)
Number of years with earnings above BYA	0.15	0.14	0.01* (<0.01)	0.07	0.07	-0.00 (<0.01)	0.01 (<0.01)
Earnings above 2x BYA during at least one year (%)	2.49	2.53	-0.04 (0.07)	0.63	0.86	-0.23 (0.13)	0.19 (0.14)
Number of years with earnings above 2x BYA	0.07	0.07	-0.00 (<0.01)	0.01	0.02	-0.00 (<0.01)	0.00 (<0.01)
Earnings above 3x BYA during at least one year (%)	1.34	1.43	-0.09 (0.05)	0.20	0.29	-0.09* (0.05)	0.01 (0.07)
Number of years with earnings above 3x BYA	0.04	0.04	-0.00* (<0.01)	0.01	0.01	-0.00 (<0.01)	-0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$60,066	$59,422	$644*** ($89)	$27,511	$26,903	$608** ($205)	$37 ($224)
Number of months with SSDI payments due	50.41	49.66	0.75*** (0.08)	48.81	47.96	0.85*** (0.20)	-0.10 (0.21)
Total SSI benefits due	$148	$149	$-2 ($10)	$10,045	$10,080	$-34 ($179)	$33 ($179)
Number of months with SSI payments due	0.70	0.72	-0.01 (0.03)	44.43	44.67	-0.25 (0.23)	0.23 (0.23)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: SSDI Only T1 = 64,696; SSDI Only C1 = 694,110; Concurrent T1 = 12,405; Concurrent C1 = 197,319.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-20. Stage 1 Impact Estimates for Subgroups Defined by Employment in 2010

Outcome	Employed			Not Employed			Estimated Difference in Impact
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$28,954	$29,295	$-341 ($623)	$2,026	$1,946	$80 ($64)	$-421 ($626)
Employment during period (%)	75.98	74.79	1.19** (0.37)	11.43	11.23	0.20 (0.14)	0.99†† (0.40)
Number of years with employment	2.72	2.69	0.03 (0.02)	0.26	0.25	0.01 (<0.01)	0.03 (0.02)
Earnings above BYA during at least one year (%)	21.50	20.24	1.26** (0.53)	2.21	2.02	0.19** (0.07)	1.06†† (0.53)
Number of years with earnings above BYA	0.58	0.56	0.02 (0.02)	0.04	0.04	0.00** (<0.01)	0.01 (0.02)
Earnings above 2x BYA during at least one year (%)	8.82	9.33	-0.51 (0.29)	0.77	0.76	0.01 (0.04)	-0.52† (0.29)
Number of years with earnings above 2x BYA	0.25	0.27	-0.02 (0.01)	0.02	0.02	0.00 (<0.01)	-0.02† (0.01)
Earnings above 3x BYA during at least one year (%)	4.94	5.33	-0.39 (0.28)	0.35	0.38	-0.03 (0.03)	-0.36 (0.28)
Number of years with earnings above 3x BYA	0.14	0.16	-0.01* (<0.01)	0.01	0.01	-0.00 (<0.01)	-0.01†† (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$57,704	$55,146	$2,558*** ($253)	$53,423	$53,162	$261** ($89)	$2,297††† ($268)
Number of months with SSDI payments due	50.83	47.70	3.12*** (0.29)	49.97	49.67	0.30*** (0.08)	2.82††† (0.30)
Total SSI benefits due	$973	$987	$-14 ($37)	$2,145	$2,149	$-4 ($39)	$-10 ($54)
Number of months with SSI payments due	4.90	4.89	0.01 (0.13)	9.41	9.48	-0.06 (0.06)	0.07 (0.14)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Employed T1 = 14,688; Employed C1 = 138,165; Not Employed T1 = 62,413; Not Employed C1 = 753,264.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-21. Stage 1 Impact Estimates for Subgroups Defined by Access to Medicaid Buy-In Programs

Outcome	Access to Medicaid Buy-In Programs			No Access to Medicaid Buy-In Programs			Estimated Difference in Impact (7)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$7,113	$7,082	$31 ($118)	$5,464	$5,509	$-45 ($181)	$76 ($216)
Employment during period (%)	23.95	23.40	0.54*** (0.16)	18.91	18.98	-0.07 (0.21)	0.62†† (0.27)
Number of years with employment	0.73	0.72	0.01* (<0.01)	0.55	0.54	0.00 (0.01)	0.01 (0.01)
Earnings above BYA during at least one year (%)	5.78	5.36	0.42*** (0.12)	4.85	4.58	0.27 (0.20)	0.14 (0.23)
Number of years with earnings above BYA	0.14	0.14	0.01* (<0.01)	0.12	0.11	0.00 (<0.01)	0.00 (<0.01)
Earnings above 2x BYA during at least one year (%)	2.31	2.37	-0.06 (0.07)	1.76	1.88	-0.12 (0.08)	0.06 (0.11)
Number of years with earnings above 2x BYA	0.06	0.06	-0.00 (<0.01)	0.04	0.05	-0.00* (<0.01)	0.00 (<0.01)
Earnings above 3x BYA during at least one year (%)	1.21	1.31	-0.10 (0.05)	0.95	1.01	-0.06 (0.06)	-0.03 (0.08)
Number of years with earnings above 3x BYA	0.03	0.04	-0.00* (<0.01)	0.02	0.03	-0.00 (<0.01)	-0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$54,478	$53,831	$647*** ($120)	$53,372	$52,758	$615*** ($123)	$33 ($172)
Number of months with SSDI payments due	50.11	49.30	0.81*** (0.10)	50.14	49.47	0.67*** (0.12)	0.14 (0.16)
Total SSI benefits due	$2,016	$2,020	$-4 ($45)	$1,772	$1,789	$-17 ($44)	$14 ($63)
Number of months with SSI payments due	8.74	8.82	-0.08 (0.06)	8.41	8.42	-0.00 (0.09)	-0.08 (0.11)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Access to Medicaid Buy-In Programs T1 = 48,932; Access to Medicaid Buy-In Programs C1 = 567,652; No Access to Medicaid Buy-In Programs T1 = 28,169; No Access to Medicaid Buy-In Programs C1 = 323,777.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-22. Stage 1 Impact Estimates for Subgroups Defined by Age at Baseline

Outcome	Age 49 or Less at Baseline			Age 50 or More at Baseline			Estimated Difference in Impact (7)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$9,328	$9,336	$-8 ($167)	$4,212	$4,188	$24 ($108)	$-32 ($199)
Employment during period (%)	28.68	28.25	0.43 (0.30)	16.90	16.60	0.30 (0.17)	0.13 (0.34)
Number of years with employment	0.89	0.88	0.01 (<0.01)	0.49	0.48	0.01 (<0.01)	0.00 (0.01)
Earnings above BYA during at least one year (%)	8.09	7.63	0.46** (0.20)	3.19	2.89	0.29** (0.09)	0.17 (0.22)
Number of years with earnings above BYA	0.20	0.19	0.01 (<0.01)	0.08	0.07	0.01* (<0.01)	0.00 (<0.01)
Earnings above 2x BYA during at least one year (%)	3.16	3.27	-0.11 (0.10)	1.24	1.29	-0.04 (0.06)	-0.07 (0.12)
Number of years with earnings above 2x BYA	0.08	0.09	-0.00 (<0.01)	0.03	0.04	-0.00 (<0.01)	-0.00 (<0.01)
Earnings above 3x BYA during at least one year (%)	1.60	1.71	-0.11 (0.08)	0.72	0.79	-0.06 (0.05)	-0.05 (0.09)
Number of years with earnings above 3x BYA	0.04	0.05	-0.00 (<0.01)	0.02	0.02	-0.00 (<0.01)	-0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$46,794	$45,845	$949*** ($161)	$60,758	$60,398	$359*** ($101)	$590††† ($190)
Number of months with SSDI payments due	49.37	48.17	1.20*** (0.12)	50.79	50.41	0.38*** (0.10)	0.82††† (0.15)
Total SSI benefits due	$2,821	$2,794	$27 ($68)	$1,158	$1,197	$-39 ($22)	$66 ($71)
Number of months with SSI payments due	11.91	11.99	-0.08 (0.09)	5.71	5.75	-0.04 (0.05)	-0.04 (0.11)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Age 49 or Less at Baseline T1 = 36,276; Age 49 or Less at Baseline C1 = 427,982; Age 50 or More at Baseline T1 = 40,825; Age 50 or More at Baseline C1 = 463,447.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-23. Stage 1 Impact Estimates for Subgroups Defined by Primary Impairment of Major Affective Disorder

Outcome	Primary Impairment of Major Affective Disorder			All Other Primary Impairments			Estimated Difference in Impact (7)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$7,336	$7,127	$209 ($253)	$6,499	$6,528	$-29 ($99)	$238 ($271)
Employment during period (%)	27.32	27.15	0.17 (0.37)	21.57	21.17	0.40** (0.15)	-0.23 (0.40)
Number of years with employment	0.79	0.78	0.01 (0.01)	0.66	0.65	0.01* (<0.01)	-0.00 (0.01)
Earnings above BYA during at least one year (%)	6.88	6.19	0.69** (0.28)	5.25	4.94	0.31** (0.12)	0.38 (0.30)
Number of years with earnings above BYA	0.16	0.14	0.01 (<0.01)	0.13	0.13	0.00 (<0.01)	0.01 (<0.01)
Earnings above 2x BYA during at least one year (%)	2.41	2.46	-0.06 (0.17)	2.10	2.18	-0.08 (0.06)	0.03 (0.18)
Number of years with earnings above 2x BYA	0.06	0.06	-0.00 (<0.01)	0.06	0.06	-0.00* (<0.01)	0.00 (<0.01)
Earnings above 3x BYA during at least one year (%)	1.14	1.24	-0.09 (0.10)	1.13	1.22	-0.09* (0.04)	-0.01 (0.11)
Number of years with earnings above 3x BYA	0.03	0.03	-0.00 (<0.01)	0.03	0.03	-0.00** (<0.01)	0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$53,748	$53,207	$541** ($199)	$54,231	$53,576	$655*** ($93)	$-114 ($220)
Number of months with SSDI payments due	51.59	50.78	0.81*** (0.20)	49.85	49.08	0.76*** (0.08)	0.05 (0.21)
Total SSI benefits due	$2,082	$2,065	$17 ($64)	$1,919	$1,931	$-12 ($39)	$29 ($75)
Number of months with SSI payments due	9.53	9.71	-0.18 (0.17)	8.48	8.51	-0.03 (0.05)	-0.15 (0.17)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted or baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Major Affective Disorder T1 = 12,024; Primary Impairment of Major Affective Disorder C1 = 145,883; All Other Primary Impairments T1 = 65,077; All Other Primary Impairments C1 = 745,546.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-24. Stage 1 Impact Estimates for Subgroups Defined by Primary Impairment of Back Disorder

Outcome	Primary Impairment of Back Disorder			All Other Primary Impairments			Estimated Difference in Impact (7)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	T1 Mean (4)	C1 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2011–December 2015)							
Total earnings	$4,819	$4,724	$95 ($215)	$6,929	$6,933	$-5 ($102)	$100 ($238)
Employment during period (%)	18.42	17.92	0.50 (0.35)	23.14	22.80	0.34** (0.14)	0.16 (0.38)
Number of years with employment	0.51	0.49	0.01 (0.01)	0.71	0.70	0.01* (<0.01)	0.00 (0.01)
Earnings above BYA during at least one year (%)	4.41	3.85	0.56** (0.20)	5.69	5.34	0.34*** (0.11)	0.21 (0.23)
Number of years with earnings above BYA	0.10	0.09	0.01 (<0.01)	0.14	0.13	0.01 (<0.01)	0.00 (<0.01)
Earnings above 2x BYA during at least one year (%)	1.65	1.79	-0.14 (0.13)	2.23	2.30	-0.07 (0.06)	-0.07 (0.14)
Number of years with earnings above 2x BYA	0.04	0.05	-0.01 (<0.01)	0.06	0.06	-0.00 (<0.01)	-0.00 (<0.01)
Earnings above 3x BYA during at least one year (%)	0.91	1.03	-0.13 (0.09)	1.17	1.25	-0.08 (0.05)	-0.05 (0.10)
Number of years with earnings above 3x BYA	0.02	0.03	-0.00 (<0.01)	0.03	0.03	-0.00* (<0.01)	-0.00 (<0.01)
Benefit Outcomes (May 2011–December 2015)							
Total SSDI benefits due	$64,252	$63,790	$462** ($181)	$52,496	$51,829	$667*** ($92)	$-205 ($203)
Number of months with SSDI payments due	53.38	52.82	0.56*** (0.14)	49.58	48.78	0.80*** (0.07)	-0.24 (0.16)
Total SSI benefits due	$860	$855	$6 ($30)	$2,123	$2,132	$-10 ($39)	$15 ($49)
Number of months with SSI payments due	4.39	4.35	0.05 (0.07)	9.34	9.41	-0.07 (0.05)	0.12 (0.09)

Source: SSA administrative records from the MEF, MBR, and SSR.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Back Disorder T1 = 11,698; Primary Impairment of Back Disorder C1 = 116,600; All Other Primary Impairments T1 = 65,403; All Other Primary Impairments C1 = 774,829.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-25. Stage 2 Impact Estimates for Subgroups Defined by Duration of SSDI Receipt (T21 vs. C2)

Outcome	Short Duration			Long Duration			Estimated Difference in Impact
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$18,638	$17,348	$1,290 ($907)	$17,564	$15,901	$1,662 ($1,274)	$-372 ($1,847)
Employment during period (%)	52.95	52.41	0.54 (1.50)	55.72	52.55	3.17* (1.69)	-2.63 (2.70)
Number of years with employment	1.50	1.44	0.06 (0.05)	1.61	1.51	0.10* (0.04)	-0.04 (0.08)
Earnings above BYA during at least one year (%)	19.68	17.14	2.53* (1.26)	20.23	15.15	5.08*** (1.45)	-2.55 (2.05)
Number of years with earnings above BYA	0.45	0.38	0.07** (0.03)	0.46	0.36	0.10** (0.03)	-0.03 (0.05)
Earnings above 2x BYA during at least one year (%)	8.49	8.06	0.44 (0.69)	7.04	5.74	1.30 (0.83)	-0.86 (1.07)
Number of years with earnings above 2x BYA	0.19	0.18	0.01 (0.02)	0.16	0.12	0.03 (0.02)	-0.02 (0.03)
Earnings above 3x BYA during at least one year (%)	4.21	4.15	0.06 (0.55)	2.51	2.27	0.24 (0.53)	-0.18 (0.74)
Number of years with earnings above 3x BYA	0.09	0.09	0.00 (0.01)	0.05	0.05	0.00 (0.01)	-0.00 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$53,953	$52,361	$1,592** ($570)	$49,589	$47,652	$1,937** ($689)	$-346 ($896)
Number of months with SSDI payments due	44.92	42.58	2.34*** (0.33)	44.24	42.26	1.98*** (0.39)	0.36 (0.54)
Total SSI benefits due	$177	$175	$2 ($47)	$118	$97	$22 ($45)	$-20 ($64)
Number of months with SSI payments due	0.98	0.89	0.09 (0.16)	0.58	0.57	0.01 (0.16)	0.08 (0.23)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Short Duration T21 = 3,125, Short Duration C2 = 3,102, Long Duration T21 = 1,729, Long Duration C2 = 1,747.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-26. Stage 2 Impact Estimates for Subgroups Defined by Duration of SSDI Receipt (T22 vs. C2)

Outcome	Short Duration			Long Duration			Estimated Difference in Impact
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$19,522	$17,348	$2,174 ($1,301)	$17,109	$15,901	$1,207 ($1,585)	$966 ($1,987)
Employment during period (%)	55.33	52.41	2.92* (1.37)	55.61	52.55	3.05 (2.02)	-0.14 (2.24)
Number of years with employment	1.56	1.44	0.11** (0.05)	1.56	1.51	0.05 (0.05)	0.07 (0.07)
Earnings above BYA during at least one year (%)	20.76	17.14	3.62*** (1.11)	18.27	15.15	3.13* (1.69)	0.49 (2.20)
Number of years with earnings above BYA	0.49	0.38	0.11*** (0.03)	0.44	0.36	0.08* (0.04)	0.03 (0.05)
Earnings above 2x BYA during at least one year (%)	8.11	8.06	0.05 (0.74)	5.99	5.74	0.26 (0.86)	-0.21 (1.14)
Number of years with earnings above 2x BYA	0.19	0.18	0.01 (0.02)	0.13	0.12	0.01 (0.02)	0.00 (0.03)
Earnings above 3x BYA during at least one year (%)	4.10	4.15	-0.06 (0.54)	2.50	2.27	0.23 (0.65)	-0.29 (0.78)
Number of years with earnings above 3x BYA	0.10	0.09	0.00 (0.01)	0.05	0.05	0.00 (0.01)	0.00 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$53,965	$52,361	$1,604** ($625)	$49,928	$47,652	$2,277** ($789)	$-672 ($1,008)
Number of months with SSDI payments due	44.70	42.58	2.11*** (0.32)	44.32	42.26	2.06*** (0.44)	0.05 (0.59)
Total SSI benefits due	$131	$175	$-44 ($38)	$144	$97	$48 ($56)	$-92 ($69)
Number of months with SSI payments due	0.82	0.89	-0.07 (0.18)	0.80	0.57	0.23 (0.22)	-0.30 (0.28)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Short Duration T22 = 1,914, Short Duration C2 = 3,102, Long Duration T22 = 1,127, Long Duration C2 = 1,747.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).
†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-27. Stage 2 Impact Estimates for Subgroups Defined by Duration of SSDI Receipt (T22 vs. T21)

Outcome	Short Duration			Long Duration			Estimated Difference in Impact (7)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$19,522	$18,638	$884 ($1,567)	$17,109	$17,564	$-455 ($1,065)	$1,339 ($2,339)
Employment during period (%)	55.33	52.95	2.38 (1.42)	55.61	55.72	-0.11 (1.43)	2.49 (1.91)
Number of years with employment	1.56	1.50	0.05 (0.05)	1.56	1.61	-0.05 (0.04)	0.11 (0.08)
Earnings above BYA during at least one year (%)	20.76	19.68	1.08 (1.55)	18.27	20.23	-1.96 (1.11)	3.04 (2.27)
Number of years with earnings above BYA	0.49	0.45	0.04 (0.04)	0.44	0.46	-0.02 (0.03)	0.06 (0.06)
Earnings above 2x BYA during at least one year (%)	8.11	8.49	-0.39 (0.87)	5.99	7.04	-1.04 (0.73)	0.66 (1.31)
Number of years with earnings above 2x BYA	0.19	0.19	-0.00 (0.03)	0.13	0.16	-0.02 (0.02)	0.02 (0.04)
Earnings above 3x BYA during at least one year (%)	4.10	4.21	-0.11 (0.77)	2.50	2.51	-0.01 (0.39)	-0.11 (0.89)
Number of years with earnings above 3x BYA	0.10	0.09	0.00 (0.02)	0.05	0.05	0.00 (0.01)	0.00 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$53,965	$53,953	$12 ($572)	$49,928	$49,589	$339 ($824)	$-327 ($787)
Number of months with SSDI payments due	44.70	44.92	-0.22 (0.24)	44.32	44.24	0.08 (0.25)	-0.31 (0.38)
Total SSI benefits due	$131	$177	$-46 ($46)	$144	$118	$26 ($57)	$-72 ($62)
Number of months with SSI payments due	0.82	0.98	-0.17 (0.25)	0.80	0.58	0.22 (0.17)	-0.38 (0.23)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Short Duration T22 = 1,914, Short Duration T21 = 3,125, Long Duration T22 = 1,127, Long Duration T21 = 1,729.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-28. Stage 2 Impact Estimates for Subgroups Defined by Duration of SSDI Receipt (T22 + T21 vs. C2)

Outcome	Short Duration			Long Duration			Estimated Difference in Impact (7)
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$18,968	$17,348	$1,620* ($797)	$17,383	$15,901	$1,482 ($1,305)	$138 ($1,533)
Employment during period (%)	53.84	52.41	1.43 (1.28)	55.68	52.55	3.12* (1.69)	-1.70 (2.38)
Number of years with employment	1.52	1.44	0.08 (0.04)	1.59	1.51	0.08* (0.04)	0.00 (0.07)
Earnings above BYA during at least one year (%)	20.08	17.14	2.94*** (0.86)	19.45	15.15	4.30** (1.45)	-1.37 (1.80)
Number of years with earnings above BYA	0.47	0.38	0.09*** (0.02)	0.45	0.36	0.09** (0.03)	-0.00 (0.04)
Earnings above 2x BYA during at least one year (%)	8.35	8.06	0.29 (0.61)	6.62	5.74	0.89 (0.73)	-0.59 (0.69)
Number of years with earnings above 2x BYA	0.19	0.18	0.01 (0.01)	0.15	0.12	0.02 (0.02)	-0.01 (0.01)
Earnings above 3x BYA during at least one year (%)	4.17	4.15	0.01 (0.47)	2.50	2.27	0.24 (0.55)	-0.22 (0.52)
Number of years with earnings above 3x BYA	0.09	0.09	0.00 (0.01)	0.05	0.05	0.00 (0.01)	0.00 (0.01)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$53,958	$52,361	$1,597** ($510)	$49,724	$47,652	$2,072*** ($621)	$-476 ($457)
Number of months with SSDI payments due	44.84	42.58	2.25*** (0.31)	44.27	42.26	2.01*** (0.35)	0.24 (0.53)
Total SSI benefits due	$159	$175	$-15 ($35)	$129	$97	$32 ($36)	$-47 ($55)
Number of months with SSI payments due	0.92	0.89	0.03 (0.14)	0.67	0.57	0.10 (0.15)	-0.07 (0.15)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Short Duration T22 + T21 = 5,039, Short Duration C2 = 3,102, Long Duration T22 + T21 = 2,856, Long Duration C2 = 1,747.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-29. Stage 2 Impact Estimates for Subgroups Defined by Employment at Baseline (T21 vs. C2)

Outcome	Employed			Not Employed			Estimated Difference in Impact
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$41,732	$39,870	$1,862 ($1,860)	$9,757	$8,236	$1,521* ($675)	$340 ($1,955)
Employment during period (%)	90.61	90.07	0.54 (1.20)	42.04	39.51	2.53* (1.21)	-1.99 (1.70)
Number of years with employment	2.99	3.03	-0.04 (0.06)	1.07	0.95	0.12*** (0.03)	-0.16† (0.07)
Earnings above BYA during at least one year (%)	45.02	37.40	7.62*** (2.14)	11.27	8.45	2.82*** (0.81)	4.80† (2.27)
Number of years with earnings above BYA	1.14	0.95	0.20** (0.06)	0.22	0.17	0.05** (0.02)	0.14†† (0.06)
Earnings above 2x BYA during at least one year (%)	17.37	15.72	1.66 (1.59)	4.28	3.49	0.79 (0.59)	0.87 (1.67)
Number of years with earnings above 2x BYA	0.43	0.37	0.06 (0.04)	0.08	0.07	0.01 (0.01)	0.05 (0.04)
Earnings above 3x BYA during at least one year (%)	7.46	7.03	0.43 (1.24)	1.75	1.62	0.13 (0.34)	0.30 (1.27)
Number of years with earnings above 3x BYA	0.17	0.17	-0.00 (0.03)	0.03	0.03	0.00 (0.01)	-0.00 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$48,052	$43,973	$4,079*** ($1,007)	$52,667	$51,644	$1,022* ($517)	$3,057†† ($1,130)
Number of months with SSDI payments due	42.64	37.17	5.46*** (0.76)	45.21	44.25	0.96*** (0.26)	4.50††† (0.84)
Total SSI benefits due	$38	$50	$-12 ($25)	$179	$158	$21 ($41)	$-33 ($45)
Number of months with SSI payments due	0.32	0.29	0.03 (0.20)	0.86	0.86	0.01 (0.14)	0.02 (0.20)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Employed T21 = 1,207, Employed C2 = 1,187, Not Employed T21 = 3,610, Not Employed C2 = 3,627.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-30. Stage 2 Impact Estimates for Subgroups Defined by Employment at Baseline (T22 vs. C2)

Outcome	Employed			Not Employed			Estimated Difference in Impact
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$43,440	$39,870	$3,570 ($2,165)	$9,400	$8,236	$1,164 ($982)	$2,405 ($2,267)
Employment during period (%)	88.71	90.07	-1.36 (1.43)	43.82	39.51	4.31** (1.88)	-5.67†† (1.99)
Number of years with employment	3.03	3.03	0.00 (0.07)	1.04	0.95	0.10* (0.04)	-0.09 (0.09)
Earnings above BYA during at least one year (%)	44.36	37.40	6.96** (2.46)	10.75	8.45	2.30** (0.84)	4.65 (2.60)
Number of years with earnings above BYA	1.17	0.95	0.23** (0.07)	0.22	0.17	0.05* (0.03)	0.18†† (0.07)
Earnings above 2x BYA during at least one year (%)	15.80	15.72	0.08 (1.79)	3.79	3.49	0.29 (0.75)	-0.21 (1.87)
Number of years with earnings above 2x BYA	0.39	0.37	0.02 (0.05)	0.07	0.07	0.01 (0.02)	0.01 (0.05)
Earnings above 3x BYA during at least one year (%)	8.11	7.03	1.09 (1.27)	1.51	1.62	-0.10 (0.43)	1.19 (1.32)
Number of years with earnings above 3x BYA	0.19	0.17	0.02 (0.03)	0.03	0.03	-0.00 (0.01)	0.02 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$47,552	$43,973	$3,579** ($1,160)	$53,070	$51,644	$1,425** ($595)	$2,154 ($1,303)
Number of months with SSDI payments due	42.13	37.17	4.96*** (0.73)	45.35	44.25	1.10*** (0.29)	3.85††† (0.78)
Total SSI benefits due	$39	$50	$-11 ($34)	$175	$158	$17 ($47)	$-27 ($68)
Number of months with SSI payments due	0.19	0.29	-0.09 (0.25)	1.02	0.86	0.17 (0.21)	-0.26 (0.40)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Employed T22 = 702, Employed C2 = 1,187, Not Employed T22 = 2,317, Not Employed C2 = 3,627.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-31. Stage 2 Impact Estimates for Subgroups Defined by Employment at Baseline (T22 vs. T21)

Outcome	Employed			Not Employed			Estimated Difference in Impact (7)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$43,440	$41,732	$1,708 ($1,423)	$9,400	$9,757	$-357 ($556)	$2,065 ($1,407)
Employment during period (%)	88.71	90.61	-1.90 (1.39)	43.82	42.04	1.78 (1.36)	-3.68† (1.79)
Number of years with employment	3.03	2.99	0.04 (0.06)	1.04	1.07	-0.03 (0.03)	0.07 (0.09)
Earnings above BYA during at least one year (%)	44.36	45.02	-0.66 (2.32)	10.75	11.27	-0.52 (0.57)	-0.15 (2.40)
Number of years with earnings above BYA	1.17	1.14	0.03 (0.05)	0.22	0.22	-0.00 (0.02)	0.03 (0.05)
Earnings above 2x BYA during at least one year (%)	15.80	17.37	-1.57** (0.55)	3.79	4.28	-0.49 (0.55)	-1.08 (0.74)
Number of years with earnings above 2x BYA	0.39	0.43	-0.04 (0.03)	0.07	0.08	-0.01 (0.01)	-0.03 (0.04)
Earnings above 3x BYA during at least one year (%)	8.11	7.46	0.65 (1.18)	1.51	1.75	-0.24 (0.35)	0.89 (1.24)
Number of years with earnings above 3x BYA	0.19	0.17	0.02 (0.03)	0.03	0.03	-0.00 (0.01)	0.03 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$47,552	$48,052	$-500 ($1,126)	$53,070	$52,667	$403 ($848)	$-903 ($1,629)
Number of months with SSDI payments due	42.13	42.64	-0.51 (0.72)	45.35	45.21	0.14 (0.32)	-0.65 (0.99)
Total SSI benefits due	$39	$38	$1 ($29)	$175	$179	$-4 ($59)	$6 ($68)
Number of months with SSI payments due	0.19	0.32	-0.12 (0.16)	1.02	0.86	0.16 (0.27)	-0.28 (0.34)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Employed T22 = 702, Employed T21 = 1,207, Not Employed T22 = 2,317, Not Employed T21 = 3,610.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-32. Stage 2 Impact Estimates for Subgroups Defined by Employment at Baseline (T22 + T21 vs. C2)

Outcome	Employed			Not Employed			Estimated Difference in Impact (7)
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$42,374	$39,870	$2,504 ($1,694)	$9,618	$8,236	$1,382 ($762)	$1,123 ($657)
Employment during period (%)	89.89	90.07	-0.18 (1.10)	42.74	39.51	3.23** (1.34)	-3.41† (1.53)
Number of years with employment	3.00	3.03	-0.02 (0.05)	1.06	0.95	0.11*** (0.03)	-0.14† (0.07)
Earnings above BYA during at least one year (%)	44.77	37.40	7.37*** (1.92)	11.07	8.45	2.61*** (0.72)	4.76††† (1.16)
Number of years with earnings above BYA	1.15	0.95	0.21*** (0.06)	0.22	0.17	0.05** (0.02)	0.16††† (0.03)
Earnings above 2x BYA during at least one year (%)	16.78	15.72	1.07 (1.42)	4.09	3.49	0.59 (0.60)	0.47 (1.07)
Number of years with earnings above 2x BYA	0.41	0.37	0.05 (0.04)	0.08	0.07	0.01 (0.01)	0.04 (0.02)
Earnings above 3x BYA during at least one year (%)	7.71	7.03	0.68 (1.02)	1.66	1.62	0.04 (0.33)	0.64 (1.01)
Number of years with earnings above 3x BYA	0.18	0.17	0.01 (0.03)	0.03	0.03	0.00 (0.01)	0.01 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$47,863	$43,973	$3,890*** ($918)	$52,825	$51,644	$1,180** ($465)	$2,709††† ($634)
Number of months with SSDI payments due	42.45	37.17	5.27*** (0.59)	45.27	44.25	1.02*** (0.23)	4.26††† (0.59)
Total SSI benefits due	$38	$50	$-11 ($25)	$177	$158	$19 ($33)	$-31 ($41)
Number of months with SSI payments due	0.27	0.29	-0.02 (0.21)	0.93	0.86	0.07 (0.13)	-0.09 (0.24)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Employed T22 + T21 = 1,909, Employed C2 = 1,187, Not Employed T22 + T21 = 5,927, Not Employed C2 = 3,627.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-33. Stage 2 Impact Estimates for Subgroups Defined by Access to Medicaid Buy-in Programs (T21 vs. C2)

Outcome	Access to Medicaid Buy-in Programs			No Access to Medicaid Buy-in Programs			Estimated Difference in Impact (7)
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$18,444	$17,635	$809 ($812)	$16,817	$13,472	$3,345 ($2,243)	$-2,536 ($2,400)
Employment during period (%)	55.78	54.66	1.12 (1.15)	51.16	46.64	4.51** (1.67)	-3.40 (2.03)
Number of years with employment	1.62	1.56	0.05 (0.04)	1.42	1.26	0.16** (0.05)	-0.11 (0.06)
Earnings above BYA during at least one year (%)	20.34	16.78	3.57** (1.13)	18.94	13.86	5.07** (2.18)	-1.50 (2.52)
Number of years with earnings above BYA	0.47	0.39	0.08** (0.02)	0.43	0.31	0.12* (0.06)	-0.04 (0.07)
Earnings above 2x BYA during at least one year (%)	7.77	7.13	0.65 (0.68)	7.28	5.59	1.68 (2.21)	-1.03 (2.42)
Number of years with earnings above 2x BYA	0.18	0.16	0.02 (0.02)	0.16	0.12	0.04 (0.05)	-0.02 (0.05)
Earnings above 3x BYA during at least one year (%)	3.36	3.39	-0.03 (0.54)	2.86	2.19	0.67 (0.89)	-0.70 (1.13)
Number of years with earnings above 3x BYA	0.07	0.07	-0.00 (0.01)	0.06	0.05	0.01 (0.02)	-0.01 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$52,140	$50,010	$2,129*** ($569)	$49,539	$48,612	$927 ($1,189)	$1,202 ($1,233)
Number of months with SSDI payments due	44.61	42.30	2.32*** (0.31)	44.31	42.67	1.64** (0.55)	0.68 (0.61)
Total SSI benefits due	$143	$141	$2 ($44)	$143	$99	$45 ($43)	$-43 ($55)
Number of months with SSI payments due	0.73	0.70	0.03 (0.14)	0.81	0.71	0.10 (0.20)	-0.08 (0.24)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Access to Medicaid Buy-in Programs T21 = 3,276, Access to Medicaid Buy-in Programs C2 = 3,288, No Access to Medicaid Buy-in Programs T21 = 1,578, No Access to Medicaid Buy-in Programs C2 = 1,561.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-34. Stage 2 Impact Estimates for Subgroups Defined by Access to Medicaid Buy-in Programs (T22 vs. C2)

Outcome	Access to Medicaid Buy-in Programs			No Access to Medicaid Buy-in Programs			Estimated Difference in Impact
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$19,118	$17,635	$1,484 ($1,109)	$15,406	$13,472	$1,934 ($1,990)	$-450 ($1,976)
Employment during period (%)	57.73	54.66	3.06* (1.49)	49.43	46.64	2.79 (2.33)	0.28 (2.45)
Number of years with employment	1.64	1.56	0.08* (0.04)	1.34	1.26	0.07 (0.06)	0.00 (0.07)
Earnings above BYA during at least one year (%)	19.80	16.78	3.02** (1.07)	17.96	13.86	4.10** (1.68)	-1.08 (1.80)
Number of years with earnings above BYA	0.48	0.39	0.08** (0.03)	0.42	0.31	0.11* (0.05)	-0.03 (0.05)
Earnings above 2x BYA during at least one year (%)	7.13	7.13	0.00 (0.73)	6.21	5.59	0.61 (1.24)	-0.61 (1.36)
Number of years with earnings above 2x BYA	0.16	0.16	0.00 (0.02)	0.14	0.12	0.02 (0.03)	-0.02 (0.03)
Earnings above 3x BYA during at least one year (%)	3.31	3.39	-0.07 (0.55)	2.78	2.19	0.60 (0.93)	-0.67 (1.05)
Number of years with earnings above 3x BYA	0.07	0.07	0.00 (0.01)	0.06	0.05	0.01 (0.02)	-0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$52,101	$50,010	$2,091** ($654)	$50,368	$48,612	$1,755* ($851)	$336 ($1,073)
Number of months with SSDI payments due	44.54	42.30	2.24*** (0.35)	44.32	42.67	1.66*** (0.50)	0.58 (0.56)
Total SSI benefits due	$162	$141	$21 ($49)	$78	$99	$-20 ($47)	$41 ($63)
Number of months with SSI payments due	0.95	0.70	0.24 (0.20)	0.44	0.71	-0.27 (0.20)	0.51 (0.29)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Access to Medicaid Buy-in Programs T22 = 2,067, Access to Medicaid Buy-in Programs C2 = 3,288, No Access to Medicaid Buy-in Programs T22 = 974, No Access to Medicaid Buy-in Programs C2 = 1,561.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-35. Stage 2 Impact Estimates for Subgroups Defined by Access to Medicaid Buy-in Programs (T22 vs. T21)

Outcome	Access to Medicaid Buy-in Programs			No Access to Medicaid Buy-in Programs			Estimated Difference in Impact
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$19,118	$18,444	$675 ($926)	$15,406	$16,817	$-1,411 ($876)	$2,086 ($1,528)
Employment during period (%)	57.73	55.78	1.95* (0.93)	49.43	51.16	-1.73 (1.94)	3.67† (1.93)
Number of years with employment	1.64	1.62	0.02 (0.02)	1.34	1.42	-0.09* (0.04)	0.11†† (0.05)
Earnings above BYA during at least one year (%)	19.80	20.34	-0.55 (1.08)	17.96	18.94	-0.97 (1.13)	0.42 (1.87)
Number of years with earnings above BYA	0.48	0.47	0.01 (0.02)	0.42	0.43	-0.01 (0.05)	0.02 (0.06)
Earnings above 2x BYA during at least one year (%)	7.13	7.77	-0.65 (0.65)	6.21	7.28	-1.07 (1.02)	0.42 (1.37)
Number of years with earnings above 2x BYA	0.16	0.18	-0.01 (0.01)	0.14	0.16	-0.02 (0.03)	0.00 (0.03)
Earnings above 3x BYA during at least one year (%)	3.31	3.36	-0.04 (0.56)	2.78	2.86	-0.07 (0.20)	0.03 (0.66)
Number of years with earnings above 3x BYA	0.07	0.07	0.00 (0.01)	0.06	0.06	-0.00 (0.01)	0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$52,101	$52,140	$-38 ($775)	$50,368	$49,539	$828 ($837)	$-866 ($1,108)
Number of months with SSDI payments due	44.54	44.61	-0.08 (0.17)	44.32	44.31	0.02 (0.25)	-0.09 (0.27)
Total SSI benefits due	$162	$143	$19 ($57)	$78	$143	$-65 ($40)	$84 ($71)
Number of months with SSI payments due	0.95	0.73	0.22 (0.22)	0.44	0.81	-0.37** (0.14)	0.59† (0.26)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Access to Medicaid Buy-in Programs T22 = 2,067, Access to Medicaid Buy-in Programs T21 = 3,276, No Access to Medicaid Buy-in Programs T22 = 974, No Access to Medicaid Buy-in Programs T21 = 1,578.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-36. Stage 2 Impact Estimates for Subgroups Defined by Access to Medicaid Buy-in Programs (T22 + T21 vs. C2)

Outcome	Access to Medicaid Buy-in Programs			No Access to Medicaid Buy-in Programs			
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	Estimated Difference in Impact (7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$18,705	$17,635	$1,070 ($736)	$16,276	$13,472	$2,804 ($2,107)	$-1,733 ($2,118)
Employment during period (%)	56.53	54.66	1.87 (1.14)	50.50	46.64	3.85** (1.49)	-1.98 (1.65)
Number of years with employment	1.62	1.56	0.06* (0.03)	1.39	1.26	0.13** (0.05)	-0.06 (0.06)
Earnings above BYA during at least one year (%)	20.13	16.78	3.36*** (0.93)	18.56	13.86	4.70** (1.92)	-1.34 (2.06)
Number of years with earnings above BYA	0.47	0.39	0.08*** (0.02)	0.42	0.31	0.11* (0.05)	-0.04 (0.06)
Earnings above 2x BYA during at least one year (%)	7.52	7.13	0.40 (0.60)	6.87	5.59	1.27 (1.83)	-0.88 (1.96)
Number of years with earnings above 2x BYA	0.17	0.16	0.01 (0.01)	0.15	0.12	0.03 (0.04)	-0.02 (0.04)
Earnings above 3x BYA during at least one year (%)	3.34	3.39	-0.05 (0.47)	2.83	2.19	0.64 (0.90)	-0.69 (1.05)
Number of years with earnings above 3x BYA	0.07	0.07	-0.00 (0.01)	0.06	0.05	0.01 (0.02)	-0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$52,125	$50,010	$2,115*** ($514)	$49,857	$48,612	$1,245 ($874)	$870 ($890)
Number of months with SSDI payments due	44.58	42.30	2.29*** (0.28)	44.31	42.67	1.65** (0.52)	0.64 (0.57)
Total SSI benefits due	$150	$141	$9 ($33)	$118	$99	$20 ($33)	$-11 ($34)
Number of months with SSI payments due	0.81	0.70	0.11 (0.13)	0.67	0.71	-0.04 (0.17)	0.15 (0.13)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Access to Medicaid Buy-in Programs T22 + T21 = 5,343, Access to Medicaid Buy-in Programs C2 = 3,288, No Access to Medicaid Buy-in Programs T22 + T21 = 2,552, No Access to Medicaid Buy-in Programs C2 = 1,561.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-37. Stage 2 Impact Estimates for Subgroups Defined by Age at Baseline (T21 vs. C2)

Outcome	Age 49 or Less at Baseline			Age 50 or More at Baseline			Estimated Difference in Impact
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$22,680	$20,690	$1,990* ($1,075)	$13,360	$12,355	$1,006 ($762)	$984 ($1,309)
Employment during period (%)	61.71	59.80	1.91 (1.34)	47.39	45.23	2.16 (1.35)	-0.25 (1.90)
Number of years with employment	1.80	1.73	0.07 (0.04)	1.32	1.24	0.09* (0.04)	-0.01 (0.06)
Earnings above BYA during at least one year (%)	25.43	20.87	4.55*** (1.22)	14.54	11.13	3.41** (1.15)	1.14 (1.57)
Number of years with earnings above BYA	0.59	0.50	0.09** (0.03)	0.32	0.24	0.08** (0.03)	0.01 (0.04)
Earnings above 2x BYA during at least one year (%)	10.40	9.25	1.15 (0.91)	4.89	4.19	0.70 (0.72)	0.45 (1.09)
Number of years with earnings above 2x BYA	0.23	0.21	0.03 (0.02)	0.11	0.09	0.02 (0.01)	0.01 (0.03)
Earnings above 3x BYA during at least one year (%)	4.54	3.91	0.62 (0.63)	1.91	2.22	-0.30 (0.41)	0.93 (0.74)
Number of years with earnings above 3x BYA	0.09	0.09	0.01 (0.02)	0.04	0.05	-0.01 (0.01)	0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$46,593	$44,373	$2,220*** ($665)	$56,219	$54,861	$1,359* ($687)	$861 ($924)
Number of months with SSDI payments due	43.71	41.01	2.70*** (0.39)	45.33	43.77	1.56*** (0.37)	1.15† (0.62)
Total SSI benefits due	$226	$182	$44 ($50)	$59	$77	$-18 ($31)	$61 ($58)
Number of months with SSI payments due	1.00	1.05	-0.05 (0.19)	0.51	0.36	0.14 (0.12)	-0.20 (0.23)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Age 49 or Less at Baseline T21 = 2,407, Age 49 or Less at Baseline C2 = 2,385, Age 50 or More at Baseline T21 = 2,447, Age 50 or More at Baseline C2 = 2,464.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-38. Stage 2 Impact Estimates for Subgroups Defined by Age at Baseline (T22 vs. C2)

Outcome	Age 49 or Less at Baseline			Age 50 or More at Baseline			Estimated Difference in Impact (7)
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$22,630	$20,690	$1,940 ($1,180)	$13,624	$12,355	$1,270 ($1,269)	$670 ($1,425)
Employment during period (%)	62.73	59.80	2.92 (2.29)	48.28	45.23	3.05* (1.57)	-0.13 (2.20)
Number of years with employment	1.83	1.73	0.10* (0.05)	1.28	1.24	0.05 (0.05)	0.06 (0.07)
Earnings above BYA during at least one year (%)	24.85	20.87	3.98** (1.37)	13.79	11.13	2.66 (1.71)	1.32 (2.19)
Number of years with earnings above BYA	0.60	0.50	0.09** (0.04)	0.33	0.24	0.09* (0.04)	0.01 (0.05)
Earnings above 2x BYA during at least one year (%)	8.72	9.25	-0.53 (0.94)	5.05	4.19	0.86 (0.96)	-1.39 (1.21)
Number of years with earnings above 2x BYA	0.21	0.21	0.00 (0.02)	0.10	0.09	0.01 (0.02)	-0.01 (0.03)
Earnings above 3x BYA during at least one year (%)	4.29	3.91	0.38 (0.67)	2.06	2.22	-0.16 (0.53)	0.54 (0.80)
Number of years with earnings above 3x BYA	0.10	0.09	0.01 (0.02)	0.05	0.05	-0.00 (0.01)	0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$46,463	$44,373	$2,090** ($692)	$56,767	$54,861	$1,906** ($809)	$184 ($1,087)
Number of months with SSDI payments due	43.55	41.01	2.54*** (0.45)	45.40	43.77	1.63*** (0.35)	0.92 (0.57)
Total SSI benefits due	$180	$182	$-2 ($54)	$97	$77	$20 ($51)	$-22 ($72)
Number of months with SSI payments due	1.05	1.05	-0.01 (0.25)	0.57	0.36	0.21 (0.18)	-0.21 (0.30)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Age 49 or Less at Baseline T22 = 1,477, Age 49 or Less at Baseline C2 = 2,385, Age 50 or More at Baseline T22 = 1,564, Age 50 or More at Baseline C2 = 2,464.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-39. Stage 2 Impact Estimates for Subgroups Defined by Age at Baseline (T22 vs. T21)

Outcome	Age 49 or Less at Baseline			Age 50 or More at Baseline			Estimated Difference in Impact (7)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$22,630	$22,680	$-50 ($618)	$13,624	$13,360	$264 ($922)	$-314 ($1,014)
Employment during period (%)	62.73	61.71	1.01 (1.52)	48.28	47.39	0.89 (1.44)	0.12 (2.00)
Number of years with employment	1.83	1.80	0.03 (0.03)	1.28	1.32	-0.04 (0.04)	0.07 (0.06)
Earnings above BYA during at least one year (%)	24.85	25.43	-0.58 (0.76)	13.79	14.54	-0.75 (1.33)	0.18 (1.68)
Number of years with earnings above BYA	0.60	0.59	0.00 (0.02)	0.33	0.32	0.01 (0.03)	-0.00 (0.04)
Earnings above 2x BYA during at least one year (%)	8.72	10.40	-1.68** (0.73)	5.05	4.89	0.15 (0.81)	-1.84 (1.24)
Number of years with earnings above 2x BYA	0.21	0.23	-0.03 (0.02)	0.10	0.11	-0.00 (0.02)	-0.02 (0.03)
Earnings above 3x BYA during at least one year (%)	4.29	4.54	-0.24 (0.50)	2.06	1.91	0.15 (0.35)	-0.39 (0.38)
Number of years with earnings above 3x BYA	0.10	0.09	0.00 (0.01)	0.05	0.04	0.00 (0.01)	-0.00 (0.01)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$46,463	$46,593	$-130 ($919)	$56,767	$56,219	$547 ($813)	$-677 ($1,223)
Number of months with SSDI payments due	43.55	43.71	-0.16 (0.19)	45.40	45.33	0.07 (0.31)	-0.23 (0.41)
Total SSI benefits due	$180	$226	$-46 ($75)	$97	$59	$38 ($61)	$-84 ($106)
Number of months with SSI payments due	1.05	1.00	0.05 (0.19)	0.57	0.51	0.06 (0.19)	-0.02 (0.12)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Age 49 or Less at Baseline T22 = 1,477, Age 49 or Less at Baseline T21 = 2,407, Age 50 or More at Baseline T22 = 1,564, Age 50 or More at Baseline T21 = 2,447.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-40. Stage 2 Impact Estimates for Subgroups Defined by Age at Baseline (T22 + T21 vs. C2)

Outcome	Age 49 or Less at Baseline			Age 50 or More at Baseline			
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	Estimated Difference in Impact (7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$22,661	$20,690	$1,971* ($964)	$13,464	$12,355	$1,109 ($886)	$862 ($756)
Employment during period (%)	62.10	59.80	2.30 (1.48)	47.74	45.23	2.51* (1.22)	-0.21 (1.38)
Number of years with employment	1.81	1.73	0.09* (0.04)	1.31	1.24	0.07* (0.04)	0.01 (0.05)
Earnings above BYA during at least one year (%)	25.21	20.87	4.33*** (1.08)	14.25	11.13	3.12** (1.24)	1.21 (1.43)
Number of years with earnings above BYA	0.60	0.50	0.09*** (0.03)	0.32	0.24	0.08** (0.03)	0.01 (0.03)
Earnings above 2x BYA during at least one year (%)	9.75	9.25	0.50 (0.79)	4.95	4.19	0.77 (0.72)	-0.26 (0.93)
Number of years with earnings above 2x BYA	0.22	0.21	0.02 (0.02)	0.10	0.09	0.01 (0.01)	0.00 (0.01)
Earnings above 3x BYA during at least one year (%)	4.44	3.91	0.53 (0.57)	1.97	2.22	-0.25 (0.37)	0.78 (0.54)
Number of years with earnings above 3x BYA	0.09	0.09	0.01 (0.01)	0.04	0.05	-0.01 (0.01)	0.01 (0.01)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$46,543	$44,373	$2,170*** ($552)	$56,434	$54,861	$1,574** ($626)	$597 ($687)
Number of months with SSDI payments due	43.65	41.01	2.64*** (0.36)	45.36	43.77	1.58*** (0.31)	1.06† (0.56)
Total SSI benefits due	$208	$182	$26 ($42)	$74	$77	$-3 ($28)	$29 ($22)
Number of months with SSI payments due	1.02	1.05	-0.03 (0.18)	0.53	0.36	0.17 (0.11)	-0.20 (0.15)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Age 49 or Less at Baseline T22 + T21 = 3,884, Age 49 or Less at Baseline C2 = 2,385, Age 50 or More at Baseline T22 + T21 = 4,011, Age 50 or More at Baseline C2 = 2,464.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-41. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Major Affective Disorder (T21 vs. C2)

Outcome	Primary Impairment of Major Affective Disorder			All Other Primary Impairments			Estimated Difference in Impact (7)
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$19,447	$18,079	$1,368 ($1,656)	$17,668	$16,136	$1,532* ($711)	$-165 ($1,797)
Employment during period (%)	63.37	58.68	4.69* (2.16)	52.39	51.02	1.37 (1.06)	3.32 (2.41)
Number of years with employment	1.80	1.67	0.12 (0.07)	1.51	1.44	0.07* (0.03)	0.05 (0.08)
Earnings above BYA during at least one year (%)	20.52	16.37	4.16* (1.95)	19.85	15.90	3.95*** (1.06)	0.20 (2.13)
Number of years with earnings above BYA	0.46	0.40	0.06 (0.06)	0.46	0.36	0.09*** (0.03)	-0.04 (0.06)
Earnings above 2x BYA during at least one year (%)	8.30	6.85	1.45 (1.70)	7.48	6.68	0.80 (0.70)	0.64 (2.00)
Number of years with earnings above 2x BYA	0.19	0.16	0.03 (0.04)	0.17	0.14	0.02 (0.02)	0.01 (0.05)
Earnings above 3x BYA during at least one year (%)	3.71	2.64	1.08 (0.86)	3.10	3.16	-0.07 (0.48)	1.14 (0.96)
Number of years with earnings above 3x BYA	0.08	0.07	0.01 (0.02)	0.06	0.07	-0.00 (0.01)	0.02 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$49,285	$48,210	$1,075 ($1,070)	$51,937	$49,971	$1,966*** ($515)	$-891 ($1,193)
Number of months with SSDI payments due	44.76	42.37	2.39*** (0.68)	44.47	42.40	2.07*** (0.28)	0.32 (0.76)
Total SSI benefits due	$153	$117	$36 ($56)	$140	$132	$8 ($36)	$29 ($63)
Number of months with SSI payments due	0.97	0.64	0.33 (0.25)	0.70	0.72	-0.02 (0.13)	0.36 (0.27)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Major Affective Disorder T21 = 902, Primary Impairment of Major Affective Disorder C2 = 876, All Other Primary Impairments T21 = 3,952, All Other Primary Impairments C2 = 3,973.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-42. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Major Affective Disorder (T22 vs. C2)

Outcome	Primary Impairment of Major Affective Disorder			All Other Primary Impairments			Estimated Difference in Impact
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$21,052	$18,079	$2,972 ($2,141)	$17,428	$16,136	$1,292 ($944)	$1,681 ($2,057)
Employment during period (%)	63.21	58.68	4.53 (3.75)	53.64	51.02	2.62* (1.20)	1.91 (3.41)
Number of years with employment	1.79	1.67	0.11 (0.09)	1.50	1.44	0.07 (0.04)	0.04 (0.10)
Earnings above BYA during at least one year (%)	23.58	16.37	7.21** (2.30)	18.31	15.90	2.41** (0.93)	4.80† (2.49)
Number of years with earnings above BYA	0.56	0.40	0.17** (0.06)	0.44	0.36	0.07** (0.02)	0.09 (0.07)
Earnings above 2x BYA during at least one year (%)	8.80	6.85	1.94 (1.55)	6.44	6.68	-0.24 (0.63)	2.19 (1.67)
Number of years with earnings above 2x BYA	0.20	0.16	0.04 (0.04)	0.14	0.14	-0.00 (0.02)	0.04 (0.04)
Earnings above 3x BYA during at least one year (%)	4.04	2.64	1.41 (1.12)	2.97	3.16	-0.19 (0.60)	1.60 (1.39)
Number of years with earnings above 3x BYA	0.09	0.07	0.02 (0.03)	0.07	0.07	-0.00 (0.01)	0.02 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$49,307	$48,210	$1,097 ($1,179)	$52,182	$49,971	$2,210*** ($591)	$-1,113 ($1,318)
Number of months with SSDI payments due	44.35	42.37	1.98** (0.65)	44.50	42.40	2.10*** (0.32)	-0.12 (0.72)
Total SSI benefits due	$84	$117	$-34 ($45)	$152	$132	$19 ($43)	$-53 ($61)
Number of months with SSI payments due	0.66	0.64	0.02 (0.28)	0.84	0.72	0.12 (0.18)	-0.10 (0.38)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Major Affective Disorder T22 = 499, Primary Impairment of Major Affective Disorder C2 = 876, All Other Primary Impairments T22 = 2,542, All Other Primary Impairments C2 = 3,973.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-43. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Major Affective Disorder (T22 vs. T21)

Outcome	Primary Impairment of Major Affective Disorder			All Other Primary Impairments			Estimated Difference in Impact
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$21,052	$19,447	$1,605 ($1,770)	$17,428	$17,668	$-241 ($623)	$1,845 ($1,919)
Employment during period (%)	63.21	63.37	-0.16 (3.59)	53.64	52.39	1.25* (0.65)	-1.41 (3.26)
Number of years with employment	1.79	1.80	-0.01 (0.07)	1.50	1.51	-0.01 (0.02)	-0.01 (0.07)
Earnings above BYA during at least one year (%)	23.58	20.52	3.05* (1.62)	18.31	19.85	-1.54 (0.91)	4.59† (2.17)
Number of years with earnings above BYA	0.56	0.46	0.11** (0.05)	0.44	0.46	-0.02 (0.02)	0.13†† (0.05)
Earnings above 2x BYA during at least one year (%)	8.80	8.30	0.50 (1.78)	6.44	7.48	-1.05 (0.72)	1.54 (2.31)
Number of years with earnings above 2x BYA	0.20	0.19	0.01 (0.04)	0.14	0.17	-0.02 (0.02)	0.03 (0.05)
Earnings above 3x BYA during at least one year (%)	4.04	3.71	0.33 (1.33)	2.97	3.10	-0.13 (0.45)	0.46 (1.52)
Number of years with earnings above 3x BYA	0.09	0.08	0.01 (0.02)	0.07	0.06	0.00 (0.01)	0.01 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$49,307	$49,285	$22 ($1,206)	$52,182	$51,937	$244 ($512)	$-222 ($845)
Number of months with SSDI payments due	44.35	44.76	-0.41 (0.31)	44.50	44.47	0.04 (0.20)	-0.45 (0.42)
Total SSI benefits due	$84	$153	$-70 ($60)	$152	$140	$12 ($44)	$-82 ($51)
Number of months with SSI payments due	0.66	0.97	-0.31 (0.25)	0.84	0.70	0.15 (0.21)	-0.46 (0.31)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Major Affective Disorder T22 = 499, Primary Impairment of Major Affective Disorder T21 = 902, All Other Primary Impairments T22 = 2,542, All Other Primary Impairments T21 = 3,952.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-44. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Major Affective Disorder (T22 + T21 vs. C2)

Outcome	Primary Impairment of Major Affective Disorder			All Other Primary Impairments			Estimated Difference in Impact
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$20,037	$18,079	$1,958 ($1,597)	$17,573	$16,136	$1,437* ($700)	$521 ($1,273)
Employment during period (%)	63.31	58.68	4.63* (2.17)	52.88	51.02	1.86* (1.00)	2.77 (2.23)
Number of years with employment	1.79	1.67	0.12* (0.06)	1.51	1.44	0.07** (0.03)	0.05 (0.07)
Earnings above BYA during at least one year (%)	21.65	16.37	5.28** (1.77)	19.24	15.90	3.35*** (0.85)	1.93 (1.59)
Number of years with earnings above BYA	0.50	0.40	0.10* (0.05)	0.45	0.36	0.09*** (0.02)	0.01 (0.05)
Earnings above 2x BYA during at least one year (%)	8.48	6.85	1.63 (1.36)	7.07	6.68	0.39 (0.53)	1.24 (1.45)
Number of years with earnings above 2x BYA	0.19	0.16	0.03 (0.03)	0.16	0.14	0.01 (0.01)	0.02 (0.03)
Earnings above 3x BYA during at least one year (%)	3.84	2.64	1.20 (0.77)	3.05	3.16	-0.12 (0.48)	1.32 (0.84)
Number of years with earnings above 3x BYA	0.08	0.07	0.02 (0.02)	0.07	0.07	-0.00 (0.01)	0.02 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$49,292	$48,210	$1,083 ($960)	$52,033	$49,971	$2,062*** ($465)	$-979 ($1,136)
Number of months with SSDI payments due	44.61	42.37	2.24*** (0.64)	44.48	42.40	2.08*** (0.25)	0.16 (0.71)
Total SSI benefits due	$128	$117	$11 ($45)	$145	$132	$12 ($29)	$-2 ($48)
Number of months with SSI payments due	0.86	0.64	0.22 (0.21)	0.75	0.72	0.03 (0.12)	0.18 (0.26)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Major Affective Disorder T22 + T21 = 1,401, Primary Impairment of Major Affective Disorder C2 = 876, All Other Primary Impairments T22 + T21 = 6,494, All Other Primary Impairments C2 = 3,973.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-45. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Back Disorder (T21 vs. C2)

Outcome	Primary Impairment of Back Disorder			All Other Primary Impairments			Estimated Difference in Impact (7)
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$14,920	$13,849	$1,070 ($1,831)	$18,475	$16,904	$1,571* ($709)	$-501 ($1,887)
Employment during period (%)	48.50	45.40	3.10 (2.80)	55.43	53.55	1.88* (1.01)	1.21 (2.99)
Number of years with employment	1.33	1.19	0.14 (0.09)	1.60	1.52	0.07** (0.03)	0.07 (0.09)
Earnings above BYA during at least one year (%)	17.99	13.45	4.54* (2.30)	20.28	16.36	3.91*** (0.84)	0.63 (2.27)
Number of years with earnings above BYA	0.38	0.30	0.08 (0.05)	0.47	0.38	0.09*** (0.02)	-0.01 (0.05)
Earnings above 2x BYA during at least one year (%)	7.40	5.63	1.77 (1.73)	7.69	6.87	0.82 (0.59)	0.95 (1.68)
Number of years with earnings above 2x BYA	0.15	0.14	0.02 (0.04)	0.17	0.15	0.02 (0.02)	-0.01 (0.05)
Earnings above 3x BYA during at least one year (%)	3.12	3.78	-0.65 (1.13)	3.24	2.96	0.29 (0.42)	-0.94 (1.20)
Number of years with earnings above 3x BYA	0.06	0.08	-0.02 (0.03)	0.07	0.07	0.00 (0.01)	-0.02 (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$54,174	$53,329	$846 ($1,213)	$51,006	$49,085	$1,920*** ($500)	$-1,075 ($1,362)
Number of months with SSDI payments due	46.20	44.56	1.64** (0.51)	44.28	42.08	2.20*** (0.28)	-0.56 (0.60)
Total SSI benefits due	$81	$90	$-9 ($40)	$152	$135	$16 ($36)	$-26 ($49)
Number of months with SSI payments due	0.51	0.53	-0.02 (0.22)	0.79	0.73	0.06 (0.13)	-0.07 (0.25)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Back Disorder T21 = 661, Primary Impairment of Back Disorder C2 = 682, All Other Primary Impairments T21 = 4,193, All Other Primary Impairments C2 = 4,167.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-46. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Back Disorder (T22 vs. C2)

Outcome	Primary Impairment of Back Disorder			All Other Primary Impairments			Estimated Difference in Impact (7)
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$10,972	$13,849	$-2,877 ($1,694)	$19,158	$16,904	$2,255* ($1,157)	$-5,132†† ($1,872)
Employment during period (%)	47.68	45.40	2.28 (3.12)	56.62	53.55	3.07* (1.61)	-0.80 (3.34)
Number of years with employment	1.19	1.19	0.00 (0.09)	1.61	1.52	0.08** (0.04)	-0.08 (0.10)
Earnings above BYA during at least one year (%)	11.75	13.45	-1.70 (2.03)	20.40	16.36	4.03*** (0.97)	-5.74†† (2.24)
Number of years with earnings above BYA	0.27	0.30	-0.03 (0.05)	0.49	0.38	0.11*** (0.03)	-0.13†† (0.06)
Earnings above 2x BYA during at least one year (%)	3.98	5.63	-1.66 (1.44)	7.30	6.87	0.43 (0.64)	-2.09 (1.58)
Number of years with earnings above 2x BYA	0.07	0.14	-0.07* (0.03)	0.17	0.15	0.02 (0.02)	-0.08† (0.04)
Earnings above 3x BYA during at least one year (%)	0.67	3.78	-3.10*** (0.94)	3.54	2.96	0.58 (0.46)	-3.69††† (1.03)
Number of years with earnings above 3x BYA	0.01	0.08	-0.07** (0.02)	0.08	0.07	0.01 (0.01)	-0.09††† (0.03)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$54,174	$53,329	$845 ($1,305)	$51,240	$49,085	$2,154*** ($575)	$-1,309 ($1,424)
Number of months with SSDI payments due	46.54	44.56	1.98*** (0.59)	44.17	42.08	2.10*** (0.32)	-0.12 (0.64)
Total SSI benefits due	$201	$90	$111 ($84)	$131	$135	$-5 ($40)	$115 ($99)
Number of months with SSI payments due	1.25	0.53	0.73 (0.52)	0.75	0.73	0.02 (0.16)	0.71 (0.60)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment .Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Back Disorder T22 = 424, Primary Impairment of Back Disorder C2 = 682, All Other Primary Impairments T22 = 2,617, All Other Primary Impairments C2 = 4,167.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-47. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Back Disorder (T22 vs. T21)

Outcome	Primary Impairment of Back Disorder			All Other Primary Impairments			Estimated Difference in Impact
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$10,972	$14,920	$-3,947*** ($1,131)	$19,158	$18,475	$683 ($597)	$-4,630††† ($1,152)
Employment during period (%)	47.68	48.50	-0.82 (2.22)	56.62	55.43	1.19 (1.23)	-2.01 (2.66)
Number of years with employment	1.19	1.33	-0.14** (0.05)	1.61	1.60	0.01 (0.03)	-0.15†† (0.06)
Earnings above BYA during at least one year (%)	11.75	17.99	-6.24*** (1.78)	20.40	20.28	0.12 (0.69)	-6.36††† (1.95)
Number of years with earnings above BYA	0.27	0.38	-0.11*** (0.03)	0.49	0.47	0.02 (0.02)	-0.13††† (0.03)
Earnings above 2x BYA during at least one year (%)	3.98	7.40	-3.43* (1.59)	7.30	7.69	-0.38 (0.36)	-3.04† (1.45)
Number of years with earnings above 2x BYA	0.07	0.15	-0.08** (0.03)	0.17	0.17	-0.01 (0.01)	-0.08†† (0.03)
Earnings above 3x BYA during at least one year (%)	0.67	3.12	-2.45*** (0.64)	3.54	3.24	0.29 (0.39)	-2.74††† (0.71)
Number of years with earnings above 3x BYA	0.01	0.06	-0.05*** (0.01)	0.08	0.07	0.01 (0.01)	-0.06††† (0.01)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$54,174	$54,174	$-0 ($1,248)	$51,240	$51,006	$234 ($623)	$-234 ($1,158)
Number of months with SSDI payments due	46.54	46.20	0.34 (0.68)	44.17	44.28	-0.10 (0.18)	0.44 (0.75)
Total SSI benefits due	$201	$81	$120 ($75)	$131	$152	$-21 ($47)	$141 ($87)
Number of months with SSI payments due	1.25	0.51	0.74 (0.53)	0.75	0.79	-0.04 (0.18)	0.78 (0.54)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Back Disorder T22 = 424, Primary Impairment of Back Disorder T21 = 661, All Other Primary Impairments T22 = 2,617, All Other Primary Impairments T21 = 4,193.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-48. Stage 2 Impact Estimates for Subgroups Defined by Primary Impairment of Back Disorder (T22 + T21 vs. C2)

Outcome	Primary Impairment of Back Disorder			All Other Primary Impairments			Estimated Difference in Impact
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	(7)
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$13,378	$13,849	$-471 ($1,616)	$18,743	$16,904	$1,839* ($818)	$-2,310 ($1,657)
Employment during period (%)	48.18	45.40	2.78 (2.50)	55.89	53.55	2.34* (1.13)	0.44 (2.13)
Number of years with employment	1.28	1.19	0.09 (0.07)	1.60	1.52	0.08** (0.03)	0.01 (0.08)
Earnings above BYA during at least one year (%)	15.55	13.45	2.10 (1.78)	20.33	16.36	3.96*** (0.82)	-1.87 (1.29)
Number of years with earnings above BYA	0.34	0.30	0.04 (0.04)	0.48	0.38	0.10*** (0.02)	-0.06 (0.04)
Earnings above 2x BYA during at least one year (%)	6.06	5.63	0.43 (1.35)	7.54	6.87	0.67 (0.52)	-0.24 (1.32)
Number of years with earnings above 2x BYA	0.12	0.14	-0.02 (0.04)	0.17	0.15	0.02 (0.02)	-0.04 (0.04)
Earnings above 3x BYA during at least one year (%)	2.16	3.78	-1.61 (0.96)	3.36	2.96	0.40 (0.39)	-2.01†† (0.72)
Number of years with earnings above 3x BYA	0.04	0.08	-0.04 (0.02)	0.07	0.07	0.01 (0.01)	-0.05†† (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$54,175	$53,329	$846 ($1,071)	$51,096	$49,085	$2,011*** ($452)	$-1,165 ($1,077)
Number of months with SSDI payments due	46.33	44.56	1.77*** (0.46)	44.24	42.08	2.16*** (0.25)	-0.39 (0.49)
Total SSI benefits due	$127	$90	$38 ($50)	$144	$135	$8 ($28)	$29 ($59)
Number of months with SSI payments due	0.80	0.53	0.27 (0.27)	0.77	0.73	0.04 (0.11)	0.23 (0.34)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Primary Impairment of Back Disorder T22 + T21 = 1,085, Primary Impairment of Back Disorder C2 = 682, All Other Primary Impairments T22 + T21 = 6,810, All Other Primary Impairments C2 = 4,167.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-49. Stage 2 Impact Estimates for Subgroups Defined by Education at Baseline (T21 vs. C2)

Outcome	Less than Associate's Degree			Any Postsecondary Degree			Estimated Difference in Impact (7)
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$16,082	$13,797	$2,284*** ($697)	$21,799	$21,665	$134 ($1,385)	$2,150 ($1,538)
Employment during period (%)	52.91	50.08	2.83* (1.39)	57.77	57.54	0.23 (1.70)	2.61 (2.06)
Number of years with employment	1.50	1.38	0.13*** (0.04)	1.68	1.70	-0.02 (0.05)	0.15†† (0.06)
Earnings above BYA during at least one year (%)	18.19	13.75	4.43*** (0.93)	23.47	20.27	3.21* (1.46)	1.22 (1.72)
Number of years with earnings above BYA	0.42	0.32	0.10*** (0.02)	0.54	0.47	0.07 (0.04)	0.03 (0.04)
Earnings above 2x BYA during at least one year (%)	6.41	5.20	1.22* (0.63)	10.13	9.60	0.53 (1.08)	0.68 (1.24)
Number of years with earnings above 2x BYA	0.14	0.11	0.03* (0.02)	0.23	0.22	0.00 (0.03)	0.03 (0.03)
Earnings above 3x BYA during at least one year (%)	2.36	2.07	0.29 (0.40)	4.96	4.96	-0.01 (0.90)	0.30 (0.89)
Number of years with earnings above 3x BYA	0.05	0.05	0.00 (0.01)	0.11	0.11	0.00 (0.02)	0.00 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$48,546	$47,049	$1,497** ($529)	$57,431	$55,116	$2,315** ($916)	$-818 ($1,058)
Number of months with SSDI payments due	44.42	42.60	1.83*** (0.31)	44.76	42.12	2.64*** (0.43)	-0.81 (0.53)
Total SSI benefits due	$163	$172	$-9 ($48)	$104	$45	$59 ($44)	$-68 ($69)
Number of months with SSI payments due	0.85	0.93	-0.08 (0.17)	0.47	0.25	0.22 (0.16)	-0.30 (0.25)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Less than Associate's Degree T21 = 3,290, Less than Associate's Degree C2 = 3,224, Any Postsecondary Degree T21 = 1,524, Any Postsecondary Degree C2 = 1,586.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-50. Stage 2 Impact Estimates for Subgroups Defined by Education at Baseline (T22 vs. C2)

Outcome	Less than Associate's Degree			Any Postsecondary Degree			Estimated Difference in Impact (7)
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$15,200	$13,797	$1,403* ($756)	$24,095	$21,665	$2,430 ($1,960)	$-1,027 ($1,744)
Employment during period (%)	52.99	50.08	2.91 (1.62)	60.40	57.54	2.86 (2.35)	0.04 (2.60)
Number of years with employment	1.46	1.38	0.09* (0.04)	1.75	1.70	0.05 (0.08)	0.04 (0.11)
Earnings above BYA during at least one year (%)	17.99	13.75	4.24*** (1.03)	22.08	20.27	1.81 (1.64)	2.42 (1.93)
Number of years with earnings above BYA	0.41	0.32	0.09*** (0.03)	0.57	0.47	0.10* (0.04)	0.00 (0.05)
Earnings above 2x BYA during at least one year (%)	4.96	5.20	-0.24 (0.61)	10.77	9.60	1.17 (1.27)	-1.41 (1.41)
Number of years with earnings above 2x BYA	0.11	0.11	-0.00 (0.01)	0.25	0.22	0.03 (0.03)	-0.04 (0.04)
Earnings above 3x BYA during at least one year (%)	1.82	2.07	-0.25 (0.43)	6.00	4.96	1.04 (0.92)	-1.29 (1.00)
Number of years with earnings above 3x BYA	0.04	0.05	-0.01 (0.01)	0.14	0.11	0.03 (0.02)	-0.04 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$48,856	$47,049	$1,808** ($604)	$57,407	$55,116	$2,291 ($1,380)	$-483 ($1,788)
Number of months with SSDI payments due	44.46	42.60	1.87*** (0.39)	44.58	42.12	2.46*** (0.51)	-0.59 (0.81)
Total SSI benefits due	$172	$172	$1 ($45)	$74	$45	$29 ($64)	$-28 ($78)
Number of months with SSI payments due	1.08	0.93	0.15 (0.21)	0.27	0.25	0.01 (0.18)	0.14 (0.28)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Chapter 2 for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Chapter 2 for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted. All dollar values in 2016 dollars.

Unweighted sample sizes: Less than Associate's Degree T22 = 2,035, Less than Associate's Degree C2 = 3,224, Any Postsecondary Degree T22 = 981, Any Postsecondary Degree C2 = 1,586.
*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-51. Stage 2 Impact Estimates for Subgroups Defined by Education at Baseline (T22 vs. T21)

Outcome	Less than Associate's Degree			Any Postsecondary Degree			Estimated Difference in Impact (7)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	T22 Mean (4)	T21 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$15,200	$16,082	$-881 ($500)	$24,095	$21,799	$2,296 ($1,485)	$-3,178† ($1,542)
Employment during period (%)	52.99	52.91	0.07 (1.03)	60.40	57.77	2.64 (2.02)	-2.56 (1.96)
Number of years with employment	1.46	1.50	-0.04 (0.03)	1.75	1.68	0.07 (0.07)	-0.11 (0.08)
Earnings above BYA during at least one year (%)	17.99	18.19	-0.19 (0.80)	22.08	23.47	-1.40 (1.11)	1.20 (1.29)
Number of years with earnings above BYA	0.41	0.42	-0.01 (0.01)	0.57	0.54	0.03 (0.03)	-0.04 (0.03)
Earnings above 2x BYA during at least one year (%)	4.96	6.41	-1.45** (0.48)	10.77	10.13	0.64 (1.48)	-2.09 (1.73)
Number of years with earnings above 2x BYA	0.11	0.14	-0.04** (0.01)	0.25	0.23	0.03 (0.03)	-0.06 (0.04)
Earnings above 3x BYA during at least one year (%)	1.82	2.36	-0.54 (0.43)	6.00	4.96	1.04 (0.96)	-1.58 (1.11)
Number of years with earnings above 3x BYA	0.04	0.05	-0.01 (0.01)	0.14	0.11	0.03 (0.02)	-0.03 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$48,856	$48,546	$311 ($602)	$57,407	$57,431	$-24 ($1,377)	$335 ($1,523)
Number of months with SSDI payments due	44.46	44.42	0.04 (0.29)	44.58	44.76	-0.18 (0.49)	0.22 (0.71)
Total SSI benefits due	$172	$163	$9 ($58)	$74	$104	$-30 ($44)	$39 ($66)
Number of months with SSI payments due	1.08	0.85	0.23 (0.25)	0.27	0.47	-0.21 (0.18)	0.44 (0.25)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Less than Associate's Degree T22 = 2,035, Less than Associate's Degree T21 = 3,290, Any Postsecondary Degree T22 = 981, Any Postsecondary Degree T21 = 1,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit F-52. Stage 2 Impact Estimates for Subgroups Defined by Education at Baseline (T22 + T21 vs. C2)

Outcome	Less than Associate's Degree			Any Postsecondary Degree			Estimated Difference in Impact (7)
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	T22 + T21 Mean (4)	C2 Mean (5)	Impact Estimate (6)	
Earnings and Employment Outcomes (January 2012–December 2015)							
Total earnings	$15,746	$13,797	$1,948** ($655)	$22,724	$21,665	$1,059 ($1,254)	$889 ($840)
Employment during period (%)	52.94	50.08	2.86* (1.39)	58.83	57.54	1.29 (1.54)	1.57 (2.06)
Number of years with employment	1.49	1.38	0.11*** (0.03)	1.71	1.70	0.01 (0.05)	0.10 (0.06)
Earnings above BYA during at least one year (%)	18.11	13.75	4.36*** (0.81)	22.91	20.27	2.65* (1.29)	1.71† (0.82)
Number of years with earnings above BYA	0.41	0.32	0.10*** (0.02)	0.55	0.47	0.08** (0.03)	0.02 (0.02)
Earnings above 2x BYA during at least one year (%)	5.86	5.20	0.66 (0.54)	10.39	9.60	0.79 (0.97)	-0.13 (0.57)
Number of years with earnings above 2x BYA	0.13	0.11	0.02 (0.01)	0.24	0.22	0.02 (0.02)	0.00 (0.02)
Earnings above 3x BYA during at least one year (%)	2.15	2.07	0.09 (0.34)	5.38	4.96	0.41 (0.74)	-0.33 (0.64)
Number of years with earnings above 3x BYA	0.04	0.05	-0.00 (0.01)	0.12	0.11	0.01 (0.02)	-0.01 (0.02)
Benefit Outcomes (January 2012–December 2015)							
Total SSDI benefits due	$48,664	$47,049	$1,615*** ($475)	$57,421	$55,116	$2,305** ($828)	$-690 ($1,053)
Number of months with SSDI payments due	44.44	42.60	1.84*** (0.28)	44.69	42.12	2.56*** (0.39)	-0.72 (0.47)
Total SSI benefits due	$166	$172	$-5 ($33)	$92	$45	$47 ($47)	$-52 ($58)
Number of months with SSI payments due	0.94	0.93	0.01 (0.14)	0.39	0.25	0.14 (0.13)	-0.13 (0.19)

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey.

Notes: See Appendix A for variable definitions. All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Standard errors are in parentheses. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Less than Associate's Degree T22 + T21 = 5,325, Less than Associate's Degree C2 = 3,224, Any Postsecondary Degree T22 + T21 = 2,505, Any Postsecondary Degree C2 = 1,586.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (and with no multiple comparisons adjustment).

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Appendix G. Methodology and Additional Results Related to Chapter 6: Benefit-Cost Analysis

This appendix describes how the evaluation team estimated each of the benefits and costs that we used in thebenefit-cost analyses presented in Chapter 6. Following that, the appendix presents several supplemental exhibits that support the benefit-cost analyses.

G.1 Earnings, Benefits, and Taxes

We estimated five key components of the benefit-cost analysis—pre-tax earnings, SSDI benefits due, SSI benefits due, income taxes, and payroll taxes—as annual impacts for the five-year observation period using SSA administrative data.[44,45] After inflating these impacts to 2016 dollars and discounting to the 2016 base year (i.e., computing the discounted value in 2016 for each year in the five-year observation period 2011 to 2015 using an SSA's real discount rate of 2.7 percent [SSA 2018]), we simply summed the five key impacts over the observation period. To project the impacts during the five years beyond the observation period, the evaluation team assumed that SSA and the implementation team needed several years to adjust to steady-state after implementing the benefit offset. We assume steady state operations by the fourth year and, hence, we assumed that the average impact over the 4th and 5th years during the observation period would continue during each of the next five years. We discounted the resulting annual values for the projection period to 2016 and then summed them along with the values obtained for the observation period.

As indicated in Chapter 6, we used SSA administrative data to measure income and to estimate payroll taxes. We used a tax calculator computer program[46] to determine the combined federal and state income taxes that each T1 and C1 beneficiary paid on his or her earnings and SSDI benefits received during the observation period.[47] We also used the tax calculator program to determine the payroll taxes on the earnings of the both treatment and control group beneficiaries. We then estimated the impact of the benefit offset on income and payroll taxes as the difference between the taxes the T1 subjects paid and the taxes the C1 subjects paid, and the difference between T21 and C2, T22 and C2, and T21 and T22 for Stage 2. To compute payroll taxes, we include the employer share because the tax incidence literature indicates that workers pay almost all the employers' share through reduced wages (Hamermesh 1993).

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44 The Stage 1 2011 impacts on SSDI and SSI covered only the last eight months of the year. Thus, we annualized them by multiplying by 1.5 to approximate impacts for 12 months.

45 For Stage 2, we estimated annual impacts for the four-year period from 2012 to 2015. So that the Stage 2 benefit-cost study could be conducted on the same ten-year 2011 to 2020 period as for Stage 1, we imputed 2011 impacts for Stage 2. We calculated these 2011 impacts as the average impact over 2012 to 2015.

46 Jon Bakija developed this program and described it in Bakija (2016).

47 SSI benefits are not taxed.

G.2 Cost of Operating the Benefit Offset Policy and Other Employment-Support Programs

The evaluation team constructed beneficiary-level cost data for SSDI administrative costs, work incentives counseling costs, Ticket-to-Work costs, and state vocational rehabilitation (VR) costs. In each of these cases, the team estimated costs for the entire five-year (Stage 1) or four-year (Stage 2) observation. Except for discounting, we have assumed that the annual costs of operating the benefit offset policy and current law are constant during the observation and projection periods.

G.2.1. SSDI/BOND Administrative Costs

The evaluation team constructed beneficiary-level measures of SSDI administrative costs for both treatment and control subjects. For treatment subjects, the goal of this measurement effort was to estimate the costs of administering the offset policy under the hypothetical scenario that the benefit offset was available to all SSDI beneficiaries (i.e., that there was a national offset policy that was identical to the BOND benefit offset). Therefore, the team attempted to exclude start-up costs and costs associated with demonstration-specific operational issues (such as longer-than-current-law work CDR processing times). It also meant that we calculated costs for all tasks as if SSA staff performed the tasks, including tasks that the BOND implementation team performed during the demonstration.

We measured Stage 1 costs for the May 2011 to December 2015 observation period and Stage 2 costs from January 2012 to December 2015, consistent with the time frames for the main outcomes in the impact study.

Exhibit G-1 lists the types of costs that the evaluation team measured for treatment and control subjects. Some administrative processes (such as work CDRs) are common to both current law and the offset policy, while other processes are unique to either current law or the offset policy.

Exhibit G-1. Types of SSDI/BOND Administrative Costs Measured in Benefit-Cost Study

Type of Administrative Cost	Measured for…	
	Treatment Subjects	Control Subjects
Work CDR (4 case types) • Initial work CDR to determine TWP completion • Subsequent work CDR (if necessary) to determine TWP completion • Work CDR conducted during EPE to determine payment status or termination • Work CDR conducted during initial reinstatement period (IRP) after expedited reinstatement (EXR)	✓	✓
Collecting AEEs (2 types) • AEEs (initial and revised) in first year of potential offset use • AEEs (initial and revised) in all subsequent years	✓	
Collecting evidence of non-countable income (NCI; 2 types) • Costs for tasks performed by implementation team staff during the demonstration • Costs for tasks performed by SSA staff during the demonstration	✓	
Costs of processing applications for expedited reinstatement		✓

Note: No data were available to measure other types of administrative costs such as responding to appeals of work CDR decisions, administrative law judge hearings, and establishing repayment plans. It is not clear how these types of costs would differ under a benefit offset policy compared to current law.

Costs of Work CDRs

The costs of work CDRs were by far the largest administrative cost component. We calculated the unit wage cost for each work CDR as the expected task time for a work CDR multiplied by the expected wage for an SSA staff person performing the work CDR. In fiscal year 2016, the average task time for SSA staff to perform a work CDR in the field was 277 minutes. The evaluation team assumed that initial TWP case work CDRs took twice as much time as subsequent work CDRs.[48] Using SSA administrative data on work CDRs (from SSA's "eWork" system), we calculated that initial TWP case task time was 363 minutes (6.05 hours) and subsequent work CDR task time was 181 minutes (3.02 hours).[49] The evaluation team further assumed that work CDRs were performed by SSA staff with pay grade of GS11, Step 6. We then multiplied the wage cost estimate by a loading factor to capture non-wage compensation and overhead costs. The same loading factor, described at the end of this section, was applied to all estimated wage costs.

First, we calculated the cost of TWP case work CDRs. Generally, because the offset cannot be used until after a cessation date has been determined, we would expect a similar number of TWP case work CDRs under the offset rules as under current law. However, we would expect slightly higher numbers of TWP case work CDRs under the offset policy because of the slightly higher employment detected for treatment groups. We first calculated costs for control subjects. We allowed a maximum of two TWP case work CDRs per year. Then, using the expected task time and hourly wage mentioned above, we calculated the total cost of TWP case work CDRs for those control subjects who had a TWP case work CDR record during the observation period. Because of the backlog of work CDRs for the treatment subjects that existed throughout the observation period (see Chapter 4 in Volume 1), we did not directly calculate the TWP case costs for treatment subjects. Compared to the faster current law processing times, this backlog would serve to artificially lower (a) the number of treatment subjects who ever were a TWP case during the observation period (with the completion date of the work CDR as the date the CDR took place) and (b) the number of TWP case work CDRs conditional on ever having a TWP case work CDR performed. The backlog would thus cause us to underestimate costs of administering the offset policy. To address this issue, we assumed that under a national offset policy the costs of TWP case work CDRs would exceed those under current law by the amount of the relative impact on employment found in the impact study. For example, in Stage 1, the impact of the offset on any employment during the observation period is 0.36 percentage points compared to a C1 mean of 22.11 percent (Exhibit 5-3). Thus, we set the T1 cost of TWP case work CDRs at 0.36/22.11 = 1.6 percent greater than the C1 cost.

Next, we calculated the cost of EPE case and EXR/IRP case work CDRs.[50] Using the expected task time and hourly wage mentioned above, we calculated the cost of these work CDRs for treatment and control

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[48] The shorter task time for subsequent work CDRs is due to the shorter time frame for analysis of work and earnings that needs to be considered during subsequent work CDRs.

[49] This calculation is based upon data on work CDRs performed for the C1 group during the 12-month period from May 2011 to April 2012. The weighted proportions of work CDR case types among the 53,300 work CDRs performed were as follows: initial TWP case=52.7 percent; subsequent TWP case=8.7 percent; EPE case=35.1 percent; and EXR/IRP case=3.4 percent. The task time for initial TWP case work CDRs is calculated as: 277 minutes/(.527 + (1-.527)/2) = 363 minutes.

[50] Under a national benefit offset policy structured identically to the BOND benefit offset, beneficiaries would not have work CDRs after a cessation date had been determined. They also would not be terminated for engaging in

subjects. We then added these costs to the TWP case work CDRs to obtain beneficiary-level total work CDR costs.

Costs of collecting AEEs

Under the offset policy, beneficiaries must submit an AEE so that their SSDI benefits can be adjusted according the offset rules. We calculated the unit wage cost for collecting an AEE from a beneficiary as the expected task time (as reported by the BOND implementation team) for an AEE multiplied by the expected wage for an SSA staff person who would perform this collection under a national offset policy.[51] The expected task times for collecting AEEs are as follows:

- First year AEE: 28 minutes[52]
- Subsequent year AEE (mailer returned with no follow-up): 38 minutes[53]
- Subsequent year AEE (mailer returned with follow-up): 80 minutes[54]
- Subsequent year AEE (mailer not returned, outreach): 36 minutes[55]
- Revised AEE in first or subsequent year: 28 minutes[56]

SGA. However, there would still be EPE case work CDRs because some beneficiaries who complete their TWP would not have earnings high enough at that point to have a cessation decision. In the demonstration, treatment subjects had EPE case work CDRs for this reason and also because some subjects were already in their EPE at the time of random assignment. Likewise, some treatment subjects had previously gone through expedited reinstatement when random assignment occurred. This resulted in a small number of EXR/IRP case work CDRs for treatment subjects.

51 During the demonstration, BOND implementation team staff collected AEEs from treatment subjects.

52 The 28 minutes for collecting the first year AEE is the sum of 5 minutes to contact beneficiary, 15 minutes to work with beneficiary to develop the AEE using paystubs and other evidence of earnings, 3 minutes to send a receipt to the beneficiary, and 10 minutes to perform quality control checks on the AEE (with 50 percent of AEEs checked, so average of 5 minutes across all AEEs).

53 The BOND implementation team collected subsequent year AEEs by mail. Staff send beneficiaries a mailer with an AEE form to complete. The 38 minutes for a subsequent year AEE mailer with no follow-up is the sum of 8 minutes for mailing notification postcard and up to two rounds of mailers plus about 30 minutes to process the returned mailer (opening returned mailer, scanning and uploading each file to BTS, conducting quality control review, data entry into BTS, issuing receipts to beneficiaries, and securely shredding hard copy mailers after 90 days).

54 The 80 minutes for a subsequent year AEE mailer with follow-up is the sum of 8 minutes for mailing tasks and about 72 minutes to process the returned mailer and follow-up with the beneficiary.

55 The 36 minutes for a subsequent year AEE completed by outreach AEE is the sum of 8 minutes for mailing tasks and 28 minutes for other subtasks.

56 The 28 minutes for collecting a revised AEE in any year is the sum of 20 minutes to revise the AEE based on new information submitted by the beneficiary, 10 minutes to perform quality control check on the AEE (with 50 percent of revised AEEs checked, so average of 5 minutes across all revised AEEs, and 3 minutes to send a receipt to the beneficiary.

The evaluation team assumed that SSA staff with pay grade of GS8, Step 6 would collect AEEs under a national offset policy.

We applied these unit wage costs to cohorts of treatment subjects expected to have AEEs collected each year. We did not use the actual numbers of AEEs collected because these were reduced because of the backlog of work CDRs that existed for the treatment subjects throughout the observation period. Under the faster, current-law pace of cessation date determinations, more treatment subjects would have had AEEs collected each year. To simulate current-law processing time for the treatment groups, we first calculated the time from cessation date to cessation date decision for C1 subjects. The median processing time for cessation decisions among the C1 group was 13 months. We then applied this processing time to treatment subjects, assuming that cessation dates would be identified 13 months after cessation. This implied that the cohort of subjects who would have their cessation date identified from January to December of a particular year are those with cessation dates from November two years previous through December of the previous year. This is the cohort who would complete first-year AEEs in a particular year. The cohort who would complete subsequent-year AEEs in a particular year are those whose first-year AEE was completed in a previous year (operationalized as those with cessation dates 14 or more months before January of the particular year).

Once the cohorts of first-year AEE and subsequent-year AEE submitters for each year were identified, we imputed the appropriate average unit wage costs of AEE collection for these subjects. Based on information from the implementation team, we assumed that 100 percent of those needing to submit a first-year AEE did so and 70 percent needing to submit a subsequent-year AEE did so. We further assumed that of the 70 percent submitting subsequent-year AEEs, 45 percent submitted by mailer with no follow-up, 30 percent submitted by mailer requiring follow-up, and 25 percent submitted after outreach (with follow-up requiring additional staff time). The average unit collection times for those in first-year and subsequent-year AEE cohorts were 32.2 minutes and 38.0 minutes, respectively.[57] These task times were then multiplied by the hourly wage for GS8, Step 6 staff to obtain wage costs.

Costs of collecting evidence of non-countable income (NCI)

Under the offset policy, in August of each year, SSA performs an automated reconciliation of SSDI benefits and earnings for the previous year. Leading up to that automated reconciliation, beneficiaries may submit evidence of NCI. BOND implementation team staff contacted subjects eligible for the offset to collect evidence of NCI and SSA staff verified this evidence. We assumed these processes would need to be performed under a national offset policy.

We calculated theunit wage cost for collecting evidence of NCI as the expected task time for collection multiplied by the expected wage for an SSA staff person who would perform this collection under a national offset policy. The expected task time for collection of evidence of NCI differed by whether impairment-related work expenses (IRWE's) were claimed. The expected task times were as follows:

[57] The average unit collection times incorporated time for revised AEEs, using an expectation that 15 percent of AEEs would need to be revised during the year. The first-year AEE collection time of 32.2 minutes = 28 minutes + 0.15×28 minutes. The subsequent-year AEE collection time of 38.0 minutes = (0.70×0.45×38 minutes) + (0.70×0.30×80 minutes) + (0.70×0.25×36 minutes) + (0.70×0.15×28 minutes).

- Collection of evidence for NCI: 39 minutes[58]
- Attempted collection of evidence, no NCI claimed: 11 minutes[59]
- Collection and verification, NCI with IRWE's : 180 minutes[60]
- Collection and verification, NCI with no IRWE's: 20 minutes[61]

The evaluation team assumed that the first two NCI tasks (performed by BOND implementation team staff during the demonstration) would be performed under a national offset policy by SSA staff with pay grade of GS8, Step 6. We assumed that the third and fourth NCI tasks (performed by SSA staff during the demonstration) would be performed under a national offset policy by SSA staff with pay grade of GS11, Step 6.

During the demonstration, the number of treatment subjects who were included in automated reconciliation was reduced because of the backlog of work CDRs for the treatment subjects. In order to avoid underestimating costs associated with collection of evidence of NCI, we applied the 13-month median processing time for C1 cessation decisions to the treatment groups. This allowed us to construct cohorts of treatment subjects who would have been included in automated reconciliation had work CDR processing for treatment subjects been performed at a speed identical to current law. In order to be included in an automated reconciliation cohort in any August, a treatment subject had to have a cessation date of no later than July of the previous year. The evaluation team collected data on which subjects claimed IRWE's and non-IRWE NCI only for the 2015 automated reconciliation performed in August 2016. Therefore, we calculated rates of these two types of NCI and applied these rates to the constructed cohorts for all years.[62] We multiplied the rates with the task times and the appropriate wage rates to calculate average per-beneficiary wage costs for each constructed cohort. Finally, we impute these average per-beneficiary wage costs to all in each of the constructed automated reconciliation cohorts and then sum across years within subject.

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[58] During the demonstration, this task was performed by implementation team staff. The 39 minutes for collecting evidence of NCI is the sum of 6 minutes for mailing to alert the beneficiary of a request for NCI, 5 minutes to contact the beneficiary, 20 minutes to review, document, and package evidence for submission to SSA, 10 minutes to perform quality control check on record (with 50 percent of records checked, so average of 5 minutes across all records with NCI), and 3 minutes to generate a receipt for the beneficiary.

[59] During the demonstration, this task was performed by implementation team staff. The 11 minutes for determining no NCI would be submitted is the sum of 6 minutes for mailing to alert the beneficiary of a request for NCI and 5 minutes to contact the beneficiary.

[60] During the demonstration, this task was performed by SSA staff. The estimate of 180 minutes for collection and verification when IRWE's were claimed was provided by SSA.

[61] During the demonstration, this task was performed by SSA staff. The estimate of 20 minutes for collection and verification when IRWE's were not claimed was provided by SSA.

[62] For T1 subjects, we calculated that 4.8 percent of subjects who went through automated reconciliation claimed IRWE's and 5.5 percent had NCI but no IRWE's. For T21 subjects, these proportions were 8.3 percent and 12.0 percent. For T22 subjects, these proportions were 13.1 percent and 11.4 percent.

Costs of processing applications for expedited reinstatement

Expedited reinstatement is an administrative process under current law that would not be necessary under a national offset policy.[63] Consequently, we calculate costs of this process only for control subjects. We assume that an expedited reinstatement decision takes twice as much task time as an initial TWP case work CDR (i.e., 12.1 hours).[64] Because of the skill required for expedited reinstatement processing, we assumed that it is performed by SSA staff with pay grade of GS12, Step 6, a pay grade somewhat higher than our assumption of what is required for performing a work CDR. We used SSA's eWork administrative data to identify control subjects that had undergone expedited reinstatement processing during the observation period.

Loading for employee benefits and overhead costs

After calculating wage costs based on hourly wage rates of government employees, we multiplied each by a factor of 2.411 to account for employee benefits and administrative overhead costs. This factor is the product of separate factors for federal employee benefits and SSA overhead costs for work CDR processing. A recent report by the Congressional Budget Office (CBO 2017) shows that average federal employee benefits have a value of 69.2 percent of wages across all levels of education. Fiscal year 2016 information from SSA's Office of Public Service & Operations Support, Division of Resource Management Information shows that administrative overhead has a cost of 42.5 percent of personnel costs for performing CDRs. Multiplying 1.692 for employee benefits and 1.425 for overhead results in the total factor of 2.411.

G.2.2. Work Incentives Counseling Costs

For Stage 2, the evaluation team calculated beneficiary-level costs of work incentive counseling used. We used cost information on total costs over the demonstration to derive four-year costs per subject served by WIC and EWIC. The cost per beneficiary for service by WIC cost over four years was $1,489 (in 2016 dollars, discounted to 2016). The cost for service by EWIC was $3,180. We then imputed these unit costs for T21 and T22 subjects who had received WIC or EWIC services (based on information from BTS).

The evaluation team did not have data on actual counseling costs of WIPA services for control subjects. We assumed that unit counseling costs for control subjects were identical to those for beneficiaries who used WIC. We further assumed that use of counseling would be higher under a national offset policy compared to current law by the same amount as the relative impact of the offset plus WIC on employment (-3.7 percent).[65] Because we did not have data on which C2 subjects had received counseling, we

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[63] Under the BOND benefit offset policy, beneficiaries are not terminated if they engage in SGA past 36 months after their cessation date. Therefore, expedited reinstatement after termination due to high earnings would not occur under a national offset policy.

[64] This assumption is based on estimates from BOND implementation team members with experience conducting SSA administrative procedures.

[65] As shown in Volume 1, Chapter 5, Exhibit 5-6, 54.53 percent of the T21 group had any employment during the Stage 2 observation period. This compares to 52.49 percent for the C2 group. Therefore, we assumed that total cost of counseling for the C2 group would be (1 - 52.49/54.53 =) 3.7 percent lower than that for the T21 group.

multiplied the average cost of counseling across the entire T21 group by the relative impact on employment (-3.7 percent), and imputed the product for all C2 members.[66]

G.2.3. Cost of Ticket-to-Work

The evaluation used the 2015 DAF to create a measure of TTW payments. We measured the dollar value of payments made to ENs and state VR agencies through TTW payment systems. To create this measure, we summed SSA payments to TTW providers that were due to work activity sufficient to trigger a payment during the period.

G.2.4. Cost of State Vocational Rehabilitation

The analysis estimated the impact of the benefit offset on the cost of VR services in several steps:

1. SSA reimburses state VR agencies for the services they provide to SSDI beneficiaries if the services result in a beneficiary earning at a specified level. SSA posts the average reimbursement dollar amount per claim for each fiscal year (SSA n.d., accessed June 19, 2018). The team adjusted the posted reimbursement values for Fiscal Years 2012 to 2016 to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), and discounted to 2016 using a real discount rate of 2.7 percent. Then the team averaged the five values to calculate a single VR case cost of $15,949.
2. Some beneficiaries assign their ticket under the Ticket to Work program to the state VR agency. If reimbursement for services is warranted, reimbursements can occur either through the Ticket to Work program or through SSA's cost reimbursement payment system. In order to not double-count costs for VR services, we assumed that the Ticket to Work payment of any beneficiary that was identified as both having a Ticket to Work payment and having used VR services[67] was a payment for VR services. For these beneficiaries, we did not impute any additional cost beyond the Ticket to Work payment.[68] For all other beneficiaries identified as having used VR services, we imputed the average case cost of $15,949. Therefore, the VR cost measure can be thought of as the cost for VR services that are net of Ticket to Work payments.
3. The impact on the cost of state VR services net of Ticket to Work payments was estimated as the difference between the average costs of the assignment groups. We used the same impact estimation method used in the impact analysis.

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66 We did not impute counseling costs for the C1 group because of the trivial difference this method would have produced for the Stage 1 benefit-cost study. The method would have produced an average counseling cost in T1 of about $91 over 5 years and a difference from the C1 group of 1.6 percent. This would have resulted in an additional ten-year cost to the SSDI trust fund of $3 per beneficiary.

67 As described in Section A.3.2, we classified beneficiaries who signed an IPE as having used VR services.

68 Exhibits D-4 and G-2 show that 11 percent of the T1 cases of VR service use were paid for through TTW payment systems (11 percent = the 0.41 percent whose VR service use was paid through TTW [Exhibit G-2] divided by the 3.83 percent with VR service use [Exhibit D-4]). The analogous percentage for the C1 group is 9 percent. Utilizing Exhibits D-6 and G-5, we can see that the analogous percentages for the T21, T22, and C2 groups are 18 percent, 19 percent, and 13 percent, respectively.

G.3 Other Monetized Benefits and Costs

G.3.1. Fringe Benefits from Work

The evaluation team estimated fringe benefits from work as a fraction of wages and salaries. The U.S. Bureau of Labor Statistics reported that in June 2017 wages and salaries averaged $24.10 per hour worked and fringe benefits equaled $11.03 (Bureau of Labor Statistics 2018). Thus, fringe benefits were 0.462 percent of earnings ($11.03/24.10).[69] We multiplied this figure by the impact of the benefit offset on earnings to estimate the impact on fringe benefits.

G.3.2. Work-Related Expenses

Work-related expenditures include the costs of transportation, childcare, and uniforms that workers need in order to work. According to the Survey of Income and Program Participation (SIPP), mean weekly work-related expenses other than childcare were $64.1 in 2011 (Edwards 2015) and mean monthly earnings were $3,329 (U.S. Census Bureau n.d.). We annualized both figures and then divided annualized work-related expenses by annualized earnings, to derive an estimate of work-related expenses per dollar of earnings. Using this method, we estimated that 8.34 percent of earnings are devoted to work-related expenditures.

This estimate of work-related expenses excludes expenditures on childcare. According to the SIPP, weekly childcare payment by the 31.9 percent of working mothers with children under 15 who made such payments was $143 in 2011 (Laughlin 2013). Thus, the average weekly payment made by all working mothers with children under 15 was $46 (.319 x $143). Annualizing this figure by multiplying it by 52 and then dividing it by the SIPP's estimate of the annual earnings of women ($31,956) implies that the typical working mother pays 7.4 percent of her earnings for childcare (U.S. Census Bureau n.d.). However, only slightly over half of all SSDI beneficiaries are female, and many of these persons do not have children of an age requiring childcare. Indeed, only 17.5 percent of SSDI beneficiaries had children (Wright et al. 2012), and some of these persons did not have children under the age of 15. Assuming that approximately 15 percent of the female beneficiaries do have children less than 15 implies that about 0.56 percent of the earnings of *all* working SSDI beneficiaries are used to pay for childcare (7.4 x 0.5 x 0.15). To the extent that fathers pay for childcare in order to work, this would understate childcare expenditures.

Adding the 0.56 percent estimate to the 8.34 percent estimate for work-related expenditures derived above suggests that total work-related expenditures inclusive of childcare are around 9 percent of the earnings of those SSDI beneficiaries who work. The evaluation team multiplied this 9 percent figure by the estimate of the benefit offset's impact of earnings to determine the impact on work-related expenditures.

G.3.3. Sales Taxes

The evaluation team computed the impact of the benefit offset on beneficiaries' sales tax payments as the product of the offset's impact on net incomes (i.e., earnings plus SSDI and SSI receipts less income and payroll taxes) and the percentage of consumer expenditures paid as sales taxes. This calculation assumes that all of the increase in the net incomes of beneficiaries was expended, rather than saved. Thus, it

[69] This estimate may be high for the SSDI beneficiary population as many may work part-time and/or in low-wage jobs. However, we do not know of data that breaks down fringe benefits by weekly hours or wage level.

overstates the impact on sales taxes, but probably not by much as most SSDI beneficiaries have relatively modest incomes and most low-income persons tend to save relatively little of their incomes.

The evaluation team obtained the percentage of consumer expenditures paid as sales tax from a report by Walczak and Drenkard of the Tax Foundation. The report provided current sales tax rates in each state, including both the state's own tax rate and local sales tax rates (Walczak and Drenkard 2017). The rates currently range between 4.35 percent and 9.98, excluding Alaska, with a median rate of 6.85 percent. On average, however, only 34.46 percent of personal income is subject to sales taxes. Thus, we used a rate of 2.36 percent (.0685 x .3446 x 100) of net income to compute the benefit offset's impact on sales tax payments.

G.3.4. SSI Administrative Costs

SSI administrative costs include eligibility determination, developing and maintaining information systems, issuing payments, fraud control, staff training, and outreach to potential beneficiaries. The evaluation team estimated the benefit offset's impact on the cost of administrating SSI as the product of the impact on SSI payments and the administrative costs of the SSI program per dollar of benefits paid. The analysis uses an estimate of the latter of 7.7 percent from Isaacs (2008), which relied primarily on budget documents and expenditure reports that reported administrative costs as a separate line item.

G.3.5. Non-Market Time

It is difficult to estimate the value of nonmarket time that study subjects lose as their work hours increase. Nonetheless, some previous research that suggests that the per-hour value of such time is substantial, at least a quarter of the increase in disposable income attributable to increased hours of work and quite likely more (Bell and Orr, 1994; Greenberg, 1997; Greenberg and Robins, 2008). For purposes of the benefit-cost analysis, the evaluation team multiplied the benefit offset's impact on earnings plus fringe benefits by 0.25 to estimate the value of loss of nonmarket time.

G.3.6. Deadweight Loss

The evaluation team calculated the estimate of deadweight loss by multiplying an estimate of the marginal excess tax burden (METB) obtained from the economics literature by the estimated change in the government's fiscal position, as indicated by the total net benefit estimates in the columns in Exhibit 6-1 for the Disability Insurance Trust Fund and for other government units. The METB is the increase in deadweight loss resulting from raising an additional dollar of tax revenue. Estimates of the METB are usually derived from general equilibrium models of the economy. A number of estimates of the value of the METB for income taxes, which are based on estimates of uncompensated labor supply elasticities, are reported in Boardman et al. (Table 3.2, 2018). METB estimates based on uncompensated labor supply elasticities, rather than compensated labor supply elasticities, are appropriate for the BOND benefit-cost analyses because the vast majority of those who support the benefit offset through their taxes are not current SSDI beneficiaries. The median value of the METB for the U.S. is 19 cents per dollar. The evaluation team used this value to derive the estimates of deadweight loss shown in Chapter 6 and Appendix G.

G.4 Supporting Tables

Exhibit G-2. Impact Estimates Used in the Stage 1 Benefit-Cost Analysis by Year Values in 2016 Dollars and 2016 Present Value

Outcome or Year of Outcome	T1 Mean	C1 Mean	Impact	S.E.
Pre-tax Earnings				
2011 (Jan-Dec)	$1,339	$1,366	-$27	$21
2012 (Jan-Dec)	1,375	1,380	-5	27
2013 (Jan-Dec)	1,417	1,407	10	25
2014 (Jan-Dec)	1,471	1,454	17	29
2015 (Jan-Dec)	1,561	1,548	12	28
SSDI Benefits Due				
2011 (May-Dec)	$9,058	$9,004	$54***	$10
2012 (Jan-Dec)	13,176	13,055	120***	19
2013 (Jan-Dec)	12,605	12,439	165***	24
2014 (Jan-Dec)	12,009	11,828	181***	28
2015 (Jan-Dec)	11,666	11,476	190***	23
SSI Benefits Due				
2011 (May-Dec)	$345	$342	$4	$6
2012 (Jan-Dec)	490	490	1	8
2013 (Jan-Dec)	458	464	-5	8
2014 (Jan-Dec)	425	428	-3	8
2015 (Jan-Dec)	385	386	-1	8
Payroll Taxes				
2011 (Jan-Dec)	$178	$181	-$3	$3
2012 (Jan-Dec)	183	183	-1	4
2013 (Jan-Dec)	216	215	1	4
2014 (Jan-Dec)	225	222	2	4
2015 (Jan-Dec)	238	237	2	4
Federal Income Taxes				
2011 (Jan-Dec)	$56	$62	-$6*	$3
2012 (Jan-Dec)	71	72	-1	4
2013 (Jan-Dec)	79	75	4	4
2014 (Jan-Dec)	86	83	3	5
2015 (Jan-Dec)	97	93	4	5
State Income Taxes				
2011 (Jan-Dec)	$20	$20	-$1	$1
2012 (Jan-Dec)	22	22	-1	1
2013 (Jan-Dec)	23	23	0	1
2014 (Jan-Dec)	25	25	0	2
2015 (Jan-Dec)	28	28	0	1

Outcome or Year of Outcome	T1 Mean	C1 Mean	Impact	S.E.
Other Costs				
Cost of Ticket to Work (2011-2015)	$94	$87	$8	$9
State VR service costs net of Ticket to Work (2011-2015)[a]	$546	$564	-$18	$16
SSDI/BOND administrative costs (May 2011-2015)	$81	$80	$0	$1

Source: SSA administrative records from the MEF, MBR, SSR, DAF (2015), and eWork and RSA-911 records.

Notes: Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimate are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), and discounted to 2016 using a real discount rate of 2.7 percent.

[a] Of the entire T1 group, 0.41 percent had VR cases that were paid through Ticket to Work in 2011 to 2015. The corresponding percentage for the C1 group was 0.35 percent.

Unweighted sample sizes: T1 = 77,101, C1 = 891,429

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit G-3. Benefits and Costs of the Stage 1 Benefit Offset, by Accounting Perspective Over 5 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax earnings	$7	$0	$0	$7
Fringe benefits from work	3	0	0	3
SSDI benefits	738	-738	0	0
SSI benefits	-3	0	3	0
SSI administrative costs	0	0	0	0
Payroll taxes	-1	1	0	0
Income taxes	-3	0	3	0
Sales taxes	-17	0	17	0
SSDI/BOND administrative costs	0	-1	0	-1
Cost of Ticket-to-Work	0	-8	0	-8
State VR service costs	0	0	18	18
Work-related expenses (e.g., child care, transportation, clothing)	-1	0	0	-1
Non-market time	-3	0	0	-3
Deadweight loss	0	0	0	-134
Net Monetized Benefits (+) / Costs (-)	**721**	**-745**	**42**	**-116**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over five years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value.

Unweighted sample sizes: T1 = 77,101; C1 = 891,429.

Exhibit G-4. Stage 1 Impacts on SSDI/BOND Administrative Costs and Cost Components

Outcome	T1 Mean	C1 Mean	Impact	S.E.
Total SSDI Administrative Costs (May 2011-December 2015)				
SSDI/BOND administrative costs	$81	$80	$0	$1
SSDI Administrative Cost Components (May 2011-December 2015)				
Costs of work CDRs	$66	$76	$-11***	$1
Costs of collecting first-year AEEs	1	0	1***	0
Costs of collecting subsequent-year AEEs	7	0	7***	1
Costs of collecting evidence of NCI (performed by implementation team during demonstration)	3	0	3***	0
Costs of collecting evidence of NCI (performed by SSA staff during demonstration)	3	0	3***	0
Costs of processing applications for expedited reinstatement	0	3	-3***	0

Source: SSA administrative records from eWork and the MBR.

Notes: See Section G.2.1 for discussion SSDI/BOND administrative costs. This exhibit presents estimates of impact on these costs, which serve as an input to the benefit-cost analysis. Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimate are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), and discounted to 2016 using a real discount rate of 2.7 percent.

Unweighted sample sizes: T1 = 77,101, C1 = 891,429

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit G-5. Impact Estimates for 2012-2015 Used in the Stage 2 Benefit-Cost Analysis in 2016 Dollars and 2016 Present Value

Outcome or Year of Outcome	T21 Mean	T22 Mean	C2 Mean	Impact T21-C2	S.E.	Impact T22-C2	S.E.	Impact T22-T21	S.E.
Pre-tax Earnings									
2012	$4,494	$4,559	$4,097	$396*	$184	$461	$308	$65	$217
2013	4,761	4,745	4,325	436*	201	420	316	-16	226
2014	4,904	4,872	4,449	454*	222	422	323	-32	237
2015	5,057	5,153	4,740	317	249	413	294	95	260
SSDI Benefits Due									
2012	$14,585	$14,687	$14,363	$222	$125	$324**	$143	$103	$156
2013	14,033	14,103	13,533	500***	144	570***	148	69	161
2014	13,371	13,415	12,846	525***	136	569***	153	44	190
2015	13,022	13,031	12,374	649***	143	658***	160	9	197
SSI Benefits Due									
2012	$39	$29	$28	$11	$8	$1	$9	$-10	$11
2013	38	41	36	2	9	5	11	3	11
2014	41	42	38	3	9	4	12	1	13
2015	35	37	36	-1	11	0	13	2	15
Payroll Taxes									
2012	$598	$606	$545	$53	$24	$61	$41	$9	$29
2013	728	726	662	67	31	64	48	-2	35
2014	749	744	681	69	34	64	50	-5	36
2015	774	788	725	49	38	63	45	15	40
Federal Income Taxes									
2012	$181	$192	$144	$36	$30	$48	$41	$12	$30
2013	227	240	187	40	30	53	45	13	33
2014	273	256	224	49	35	32	44	-16	36
2015	317	308	280	37	47	29	45	-8	39

Outcome or Year of Outcome	T21 Mean	T22 Mean	C2 Mean	Impact T21-C2	S.E.	Impact T22-C2	S.E.	Impact T22-T21	S.E.
State Income Taxes									
2012	$65	$66	$56	$9	$9	$10	$13	$1	$7
2013	74	76	66	8	9	11	15	3	8
2014	85	81	70	15	10	11	15	-4	9
2015	98	92	82	15	9	10	13	-6	10
Other Costs									
Cost of Ticket to Work (2012-2015)	$436	$543	$336	$101	$143	$207	$130	$106	$90
State VR service costs (2012-2015)	$1,610	$1,964	$1,692	$-81	$115	$273	$191	$354	$199
SSDI/BOND administrative costs (2012-2015)	$227	$255	$229	$-2	$7	$25*	$13	$27**	$11
Counseling costs	$566	$3,037	$548	$18	$39	$2,489***	$52	$2,471***	$66

Source: SSA administrative records from the MEF, MBR, SSR, DAF (2015), eWork, and BTS, RSA-911 records, and the Stage 2 Baseline Survey.

Notes: Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimate are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), and discounted to 2016 using a real discount rate of 2.7 percent.

[a] Of the entire T21 group, 2.15 percent had VR cases that were paid through Ticket to Work in 2012 to 2015. The corresponding percentages for the T22 and C2 groups were 2.87 percent and 1.56 percent, respectively.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

Exhibit G-6. Benefits and Costs of the Offset Plus WIC versus Current Law in Stage 2, by Accounting Perspective over 5 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$2,033	$0	$0	$2,033
Fringe benefits from work	939	0	0	939
SSDI benefits	2,407	-2,407	0	0
SSI benefits	19	0	-19	0
SSI administrative costs	0	0	-1	-1
Payroll taxes	-300	300	0	0
Income taxes	-265	0	265	0
Sales taxes	-92	0	92	0
SSDI/BOND administrative costs	0	-3	0	-3
Counseling costs	0	-23	0	-23
Cost of Ticket-to-Work	0	-128	0	-128
State VR service costs	0	0	103	103
Work-related expenses	-183	0	0	-183
Non-market time	-743	0	0	-743
Deadweight loss	0	0	0	-346
Net Monetized Benefits (+) / Costs (-)	**3,815**	**-2,261**	**439**	**1,648**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over five years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

Exhibit G-7. Benefits and Costs of the Offset Plus EWIC versus Current Law in Stage 2, by Accounting Perspective over 5 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$2,175	$0	$0	$2,175
Fringe benefits from work	1,005	0	0	1,005
SSDI benefits	2,691	-2,691	0	0
SSI benefits	13	0	-13	0
SSI administrative costs	0	0	-1	-1
Payroll taxes	-320	320	0	0
Income taxes	-258	0	258	0
Sales taxes	-102	0	102	0
SSDI/BOND administrative costs	0	-32	0	-32
Counseling costs	0	-3,153	0	-3,153
Cost of Ticket-to-Work	0	-262	0	-262
State VR service costs	0	0	-345	-345
Work-related expenses	-196	0	0	-196
Non-market time	-795	0	0	-795
Deadweight loss	0	0	0	-1,106
Net Monetized Benefits (+) / Costs (-)	**4,214**	**-5,819**	**0**	**-2,710**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over five years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

Exhibit G-8. Benefits and Costs of EWIC versus WIC, Given the Offset, in Stage 2, by Accounting Perspective over 5 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$142	$0	$0	$142
Fringe benefits from work	66	0	0	66
SSDI benefits	284	-284	0	0
SSI benefits	-5	0	5	0
SSI administrative costs	0	0	0	0
Payroll taxes	-20	20	0	0
Income taxes	7	0	-7	0
Sales taxes	-10	0	10	0
SSDI/BOND administrative costs	0	-34	0	-34
Counseling costs	0	-3,130	0	-3,130
Cost of Ticket-to-Work	0	-134	0	-134
State VR service costs	0	0	-448	-448
Work-related expenses	-13	0	0	-13
Non-market time	-52	0	0	-52
Deadweight loss	0	0	0	-761
Net Monetized Benefits (+) / Costs (-)	**399**	**-3,563**	**-440**	**-4,365**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over five years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

Exhibit G-9. Stage 2 Impacts on SSDI/BOND Administrative Costs and Cost Components

Outcome	T21 Mean	T22 Mean	C2 Mean	Impact T21-C2	S.E.	Impact T22-C2	S.E.	Impact T22-T21	S.E.
Total SSDI Administrative Costs (2012–2015)									
SSDI/BOND administrative costs	$227	$255	$229	$-2	$7	$25*	$13	$27**	$11
SSDI Administrative Cost Components (2012–2015)									
Costs of work CDRs	$181	$199	$217	$-36***	$6	$-17	$10	$18*	$10
Costs of collecting first-year AEEs	4	4	0	4***	0	4***	0	0	0
Costs of collecting subsequent-year AEEs	17	18	0	17***	1	18***	2	0	1
Costs of collecting evidence of NCI (performed by implementation team during demonstration)	11	12	0	11***	0	12***	1	1	1
Costs of collecting evidence of NCI (performed by SSA staff during demonstration)	15	23	0	15***	1	22***	2	7***	1
Costs of processing applications for expedited reinstatement	1	0	13	-12**	3	-13**	3	0	0

Source: SSA administrative records from eWork and the MBR and the Stage 2 Baseline Survey.

Notes: See Section G.2.1 for discussion SSDI/BOND administrative costs. This exhibit presents estimates of impact on these costs, which serve as an input to the benefit-cost analysis. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimate are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W), and discounted to 2016 using a real discount rate of 2.7 percent.

Unweighted sample sizes: T21 = 4,854, T22 = 3,041, C2 = 4,849.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

G.5 Stage 2 Benefits and Costs Estimated with Administrative and Survey Data

Earnings and benefits of SSDI beneficiaries are only a component of household resources that generate tax liabilities that could affect other aspects of the household and government balance sheets. Spouses and other household members' earnings, and other forms of income count toward household resources and should be valued. The last six rows of Exhibits 6-7, 6-8, and 6-9 include presumed directions and magnitudes of impacts on these other components of household resources. The earnings of spouses and other income sources, and other government benefits have the most direct potential impact on household resources and government balance sheets.

In Exhibits G-10, G-11, and G-12, we display impacts on other components of household resources in comparisons of net benefits and costs between T21 and C2, T22 and C2, andT21 and T22. Because the earnings of spouses, other income sources, and other government benefits are not available annually from administrative data, the evaluation team estimated these figures from a single year of the study, based on the 36-month follow-up survey.[70] We then extrapolated these estimated impacts to every other year of the 10-year window of the cost-benefit analysis, using appropriate adjustments for inflation and discounting. The tax computations assume that household composition and other resources are the same in every year, extrapolating from the one year in which the survey was administered (either 2014 or 2015). This necessarily introduces some error, but presumably less than assuming no one else is present in the household when computing taxes.

We may directly compare Exhibit 6-7 to Exhibit G-10 to see that there are substantial gains from increased spousal earnings and other income sources when comparing T21 and C2. That is, spousal earnings and other income sources seem to move in tandem with beneficiary earnings in comparing T21 and C2. These are offset by higher tax liabilities and forgone value of non-market time. The bottom line direction of benefits less costs to beneficiaries, the Trust Fund, other government, and society are unchanged, though magnitudes are substantially larger in Exhibit G-10. The largest differences between the results in Exhibit G-10 and the results based on purely administrative data sources in Exhibit 6-7 are spouse's earnings, other income sources, and public assistance.[71]

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[70] We used information from both the baseline survey and the 36-month follow-up survey for tax calculations. From the baseline survey, we used information on age of spouse and number and age of children. From the 36-month follow-up survey, we used information on marital status, self-employment status (used to determine whether earnings amounts from the Master Earnings File were wages or self-employment earnings), spouse's earnings, own pension income, other sources of income (including Veteran's benefits, workers' compensation, private disability insurance, and other regular sources of income), and public assistance (including SNAP, TANF, and other government assistance). Of the 36-month survey sample, 16.1 percent had dependent children, 29.6 percent were married, and 15.5 percent had spousal/partner earnings (14.1 percent spousal earnings and 1.4 percent partner earnings).

[71] A smaller source of difference is a compositional difference between the full sample and the 36-month survey sample. The 36-month survey sample is weighted to resemble the full sample on baseline characteristics. Even so, the net earnings and net SSDI benefits gains are larger for the survey sample than for the full sample. These gains are largely offset by increased taxes. The sum of the rows of Pre-tax earnings through work-related expenses is $9,311 for the survey sample compared to $9,026 for the full sample.

Comparing Exhibit 6-8 to Exhibit G-11, we see that there are substantial gains from increased spousal earnings and a fall in other income sources when comparing T22 and C2. Tax liabilities are higher in T22, and non-market time lower in T22, offsetting gains in resources. The bottom line net effect (benefits less costs) to beneficiaries, the Trust Fund, other government, and society are of comparable magnitudes in both Exhibit 6-8 and Exhibit G-11. Certainly, no qualitative conclusion is changed due to the inclusion of the survey data and re-estimation of tax liabilities with those data.

Comparing Exhibit 6-9 to Exhibit G-12, we see the net effect of two prior comparisons. The largest difference across the comparisons T21 versus C2 and T22 versus C2 was in other income sources, so naturally there is a large impact on other income in Exhibit G-12.

Across each of these comparisons, we cannot take either as a perfect estimate of costs and benefits across all 10 years. We regard the two sets of estimates as two useful points on a continuum of possible assumptions one might make about the other resources available to SSDI beneficiaries in the years under study.

Across all comparisons, the impacts on other components of household resources are potentially large in magnitude but are not large enough to qualitatively change the nature of broad conclusions about the comparisons. This is partly because there are offsetting effects for most components: for example, an increase in the earnings of spouses across 10 years is offset by increases in work-related expenses, increased losses in the value of non-market time, and higher income tax liabilities, so that the net benefit effect on beneficiaries is a small fraction of the actual difference in earnings.

Thus, none of the qualitative comparisons are reversed by including the household resources that are not monetized in the body of the report, though some magnitudes are affected.

Exhibit G-10. Benefits and Costs (Based on Administrative and Survey Data) of the Offset Plus WIC versus Current Law in Stage 2 36-Month Survey Sample, by Accounting Perspective over 10 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$4,539	$0	$0	$4,539
Fringe benefits from work	2,097	0	0	2,097
SSDI benefits	6,261	-6,261	0	0
SSI benefits	-8	0	8	0
SSI administrative costs	0	0	1	1
Payroll taxes	-1,248	1,248	0	0
Income taxes	-1,287	0	1,287	0
Sales taxes	-286	0	286	0
SSDI/BOND administrative costs	0	-9	0	-9
Counseling costs	0	-41	0	-41
Cost of Ticket-to-Work	0	-320	0	-320
State VR service costs	0	0	86	86
Work-related expenses	-756	0	0	-756
Non-market time	-3,072	0	0	-3,072
Deadweight loss	0	0	0	-814
Earnings of spouses	3,865	0	0	3,865
Public assistance	568	0	-568	0
Other income sources	1,257	0	0	1,257
Net Monetized Benefits (+) / Costs (-)	**11,930**	**-5,384**	**1,101**	**6,833**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over ten years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value. These benefits and costs are for the weighted Stage 2 36-month Survey respondent sample. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Unweighted sample sizes: T21 = 3,724, T22 = 2,350, C2 = 3,610.

Exhibit G-11. Benefits and Costs (Based on Administrative and Survey Data) of the Offset Plus EWIC versus Current Law in Stage 2 36-Month Survey Sample, by Accounting Perspective over 10 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$4,391	$0	$0	$4,391
Fringe benefits from work	2,029	0	0	2,029
SSDI benefits	5,817	-5,817	0	0
SSI benefits	8	0	-8	0
SSI administrative costs	0	0	-1	-1
Payroll taxes	-962	962	0	0
Income taxes	-715	0	715	0
Sales taxes	-252	0	252	0
SSDI/BOND administrative costs	0	-80	0	-80
Counseling costs	0	-5,938	0	-5,938
Cost of Ticket-to-Work	0	-590	0	-590
State VR service costs	0	0	-832	-832
Work-related expenses	-586	0	0	-586
Non-market time	-2,382	0	0	-2,382
Deadweight loss	0	0	0	-2,097
Earnings of spouses	2,125	0	0	2,125
Public assistance	-299	0	299	0
Other income sources	-1,080	0	0	-1,080
Net Monetized Benefits (+) / Costs (-)	**8,093**	**-11,463**	**425**	**-5,042**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over ten years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value. These benefits and costs are for the weighted Stage 2 36-month Survey respondent sample. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Unweighted sample sizes: T21 = 3,724, T22 = 2,350, C2 = 3,610.

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Exhibit G-12. Benefits and Costs (Based on Administrative and Survey Data) of EWIC versus WIC, Given the Offset, in Stage 2 36-Month Survey Sample, by Accounting Perspective over 10 Years in 2016 Present Value

Benefit or Cost Component	Beneficiaries	Disability Insurance Trust Fund	Other Government	All of Society
Monetized				
Pre-tax Earnings	$-148	$0	$0	$-148
Fringe benefits from work	-68	0	0	-68
SSDI benefits	-444	444	0	0
SSI benefits	16	0	-16	0
SSI administrative costs	0	0	-1	-1
Payroll taxes	286	-286	0	0
Income taxes	572	0	-572	0
Sales taxes	34	0	-34	0
SSDI/BOND administrative costs	0	-72	0	-72
Counseling costs	0	-5,897	0	-5,897
Cost of Ticket-to-Work	0	-270	0	-270
State VR service costs	0	0	-918	-918
Work-related expenses	170	0	0	170
Non-market time	690	0	0	690
Deadweight loss	0	0	0	-1,283
Earnings of spouses	-1,741	0	0	-1,741
Public assistance	-867	0	867	0
Other income sources	-2,337	0	0	-2,337
Net Monetized Benefits (+) / Costs (-)	**-3,837**	**-6,080**	**-675**	**-11,875**

*Rows and columns may not sum to totals due to rounding.

Notes: See Section 6.1 and Appendix G for discussion of each benefit/cost component. All benefits and costs are dollars per beneficiary over ten years and are inflation-adjusted to 2016 dollars and discounted to 2016 present value. These benefits and costs are for the weighted Stage 2 36-month Survey respondent sample. Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Unweighted sample sizes: T21 = 3,724, T22 = 2,350, C2 = 3,610.

Appendix H. Additional Results Related to Chapter 7: Interpretation and Implications

This appendix presents findings from further analysis of the Stage 1 and 2 impact estimates, as referenced in Sections 7.2.1, 7.2.2, and 7.4.1 of Chapter 7. Section H.1 describes how we separated the estimated impacts on SSDI benefits into two additive components: 1) reductions for those whose earnings increased from below to above BYA, and 2) increases for partial benefits paid in months in which treatment subjects would have received no benefit under current law. Then Section H.2 describes how we produce statistics on the Stage 1 SSDI-only treatment subjects who would not have volunteered for Stage 2 had they been solicited, for purposes of comparison to the statistics for the T21 subjects.

H.1 Two Components of Impacts on SSDI Benefits

The goal of the analysis described below is to distinguish between

- benefit reductions to those treatment subjects induced by the benefit offset to earn more than BYA and
- benefit increases to those treatment subjects who, because of earnings, would not have been due a benefit under current law in at least some months.

We apply the methodology described below to SSDI benefit due impacts in two separate years: 2014 and 2015. We opted to not consider 2013 or earlier to reduce any influence of early adjustment delays on the findings and to increase the chance that the findings reflect conscious choices of treatment beneficiaries, rather than unanticipated adjustments to their benefits. We conducted the analyses separately for 2014 and 2015 because we are concerned that the 2015 SSDI benefits due might change substantially due to adjustments that SSA might make to benefits due after data extraction had occurred. The 2014 data are also subject to revisions for the same reason, but presumably to a lesser degree.

The estimated impacts on SSDI benefits, hereafter M, for each treatment group can be decomposed into two components:

1) Reductions in benefits due to those whose earnings increase from below BYA to above BYA. We denote the fraction of beneficiaries in this group by R (for reduction) and the average impact on benefits due for this group as M_R (negative).
2) Partial benefits due to those who would have received no benefit under current law. We denote the fraction of beneficiaries in this group by W (for windfall) and the average impact on benefits due for this group as M_W (positive[72]).

[72] Presumably the partial benefits due those in the windfall group are largely determined by what the beneficiaries' earnings would be under current law, but they may also depart from that value because of induced changes in earnings relative to current law. In fact, theory predicts that earnings changes for such beneficiaries will be negative if they are aware of the change in incentives. If so, we would expect an average increase in benefits

Given these definitions:

(H.1) $M = R\ x\ M_R + W\ x\ M_W$.

As discussed in Chapter 5 (Section 5.1), the impact of the benefit offset on SSDI benefits for all SSDI beneficiaries can only be negative if reductions in benefits due to those induced to earn more than BYA—represented here by RxM_R –are sufficient to offset the windfall gains to beneficiaries who would have received no SSDI benefits to work in at least some months under current—represented by WxM_W. We know that the estimate for *M* is positive. The goal of the analysis is to assess how many more beneficiaries would need to be induced to earn above BYA (i.e., how much *R* would have to increase) in order for the benefit offset to be neutral with respect to SSDI benefits (i.e., for *M* to equal 0); an increase larger than this amount would be necessary for the impact on SSDI benefits to be negative.

To complete the analysis, we need estimates of all of the four elements on the right-hand side of Equation H.1 The impact analysis provides estimates for two elements without further information—the percentage increase in subjects with earnings above BYA, *R* and the percentage of beneficiaries receiving windfall gains, *W*. The estimate of *R* is the estimated impact on the percentage with earnings above BYA. The estimate for *W* is derived by dividing the impact estimate for the average months of SSDI benefits due by 12. Hence, *W* is the percentage of treatment subjects that would need to receive windfall benefits for a full year in order to account for all the windfall months identified.[73]

The impact estimates do not imply unique values for M_R and M_W; any pair of values that satisfy (H.1) is consistent with the impact estimates. Hence, to produce estimates we must make identifying assumptions of some sort. The assumptions we make are:

Assumption 1 (A1): Average SSDI benefits due (i.e., the partial benefits under the offset rules) for those in *R* and *W* are the same. In other words, average benefits due for those with earnings above BYA are independent of whether they are in the group induced to earn more than BYA or the windfall group.

Assumption 2 (A2): The average full annual SSDI benefit that would be due to subjects in both the *R* and *W* groups, in the absence of reductions for earnings, is 12 times the average monthly benefit due to all control subjects in all months in which they received benefits, $\hat{B}$. We calculated $\hat{B}$ by dividing average control group benefits due by the percentage of months in which they had benefits due.

These two assumptions are somewhat arbitrary, so we later consider the sensitivity of the findings to changes in the assumptions. The assumptions together imply that the average benefit windfall for those receiving a windfall is equal to the average full benefit due to those induced to earn more than BYA reduced by the average impact on the latter's benefits:

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relative to what benefits under the BOND offset rules would be if their earnings were the same as their earnings under current law.

[73] Alternatively, the *R* and *W* terms in equation H.1 can both be conceptualized as percentages of treatment subject-months, rather than as percentages of subjects. This alternative conceptualization leads to the same results.

(H.2) $M_W = \hat{B} + M_R$.

Let $\widehat{M}, \widehat{R}$ and $\widehat{W}$ represent estimates for *M, R,* and *W*. Inserting the estimates for the actual values in (H.1) and (H.2) yields two equations in two unknowns, M_R and M_W. Solving the two equations yields:

(H.3) $M_W = (\widehat{M} + \widehat{R}\hat{B})/(\hat{R} + \widehat{W})$, and

(H.4) $M_R = \left(\widehat{M} - \widehat{W}\hat{B}\right)/\left(\hat{R} + \widehat{W}\right)$.

We can infer the estimate for the value of *R* needed for benefit neutrality (*M* of zero), holding all other values constant. The benefit-neutral value, R_0, is implicitly defined by the value of R that equates the right-hand-side of (H.1) to zero:

(H.5) $0 \equiv R_0 x \widehat{M}_R - \widehat{W} x \widehat{M}_W$,

where $\widehat{M}_R$ and $\widehat{M}_W$ are the derived estimates for the population impacts.

The impact estimates and results of the calculations for T1, T21 and T22 appear in Exhibit H.1. We present findings for both 2014 and 2015. For each treatment group (especially the Stage 2 groups), impacts on benefits due in 2015 are somewhat higher than for 2014, a difference that might be partly due to more pending retroactive adjustments for 2015 than for 2014. This leads us to prefer the 2014 estimates, rather than the 2015 estimates, and to cite them in Chapter 7.

Clearly, the results in the previous paragraph depend on the two assumptions specified above. Based on Exhibits 7-1 and 7-3, it seems plausible that benefits due to treatment subjects in *R* may be somewhat higher than for those in the *W* group, especially for comparisons of T1 to C1 and T22 to C2. The point estimates for T21 versus C2 do not suggest such a difference. To illustrate the effect of a change in the equal benefits assumption for *W* and *R* (A1), suppose that the mean benefit under the offset for those in *R* is 10 percent larger than for those in *W*, rather than the same. Based on the T1 results for 2014, this change in assumption would increase the value of *R* required for benefit neutrality from 6.3 percent to 10.1 percent. This increase arises because the average saving to the DI Trust Fund for those in *R* is lower than under the "equal benefits" assumption.

We do not have any reason to believe that full monthly benefits for those in *W* and *R* are different than for beneficiaries in the control group, in either direction, or from one another (A2). Nonetheless, to illustrate the sensitivity of the results to this assumption, suppose instead that average full monthly benefits for those in the *W* group is higher than for those in the *R* group, holding the value for the *R* group constant and maintaining Assumption A1. In this case, the results would be unchanged because the reduction amount from the *R* group would be unchanged as would the windfall amount. If instead we held the *W* group value constant and increased the average full monthly benefits for the *R* group by 10 percent, the benefit-neutral value of *R* would decrease from 6.3 percent to 4.3 percent. This decrease stems from the greater reduction in monthly benefits represented by each *R* group subject.

Exhibit H-1. Calculation of Increase in Percentage with Earnings above BYA to Achieve Benefit Neutrality

	2014			2015		
	T1	T21	T22	T1	T21	T22
(1) Average benefits: control group for stage	$11,220	$12,180		$11,180	$12,048	
(2) Average months with benefits: control group for stage	10.35	10.44		10.08	10.11	
(3) *B** : average full benefits	$13,009	$14,000		$13,310	$14,300	
(4) *R* : Estimated impact on % with Earnings > BYA	0.20	2.60	2.68	0.27	2.61	2.97
(5) Estimated impact on average months with benefits	0.20	0.62	0.62	0.22	0.62	0.70
(6) *W*: % of treatment subjects with benefit windfall	1.67	5.17	5.17	1.83	5.17	5.83
(7) M_W : Average benefits to R and W	$10,287	$11,099	$11,651	$10,266	$12,926	$12,094
(8) M_R : Average offset amount [i.e., reduction in benefits] for R	-$2,722	-$2,901	-$2,349	-$3,043	-$1,374	-$2,206
(9) *M* :– Estimated impact on average benefits for all treatment subjects	$166	$498	$540	$180	$632	$640
(10) *R*-component of M (R x M_R)	-$5	-$75	-$63	-$8	-$36	-$66
(11) *W*-component of M (W x M_W)	$171	$573	$602	$188	$668	$706
(12) R_0 : *R* required for benefit neutrality (%)	6.30	19.78	25.62	6.17	48.7	32.00
(13) R_0/R	31.5	7.6	9.6	22.9	18.6	10.8

Note: The analysis assumes: 1) average benefits due for those in *R* and *W* are the same (M_W); and 2) average full annual SSDI benefit that would be due to subjects in both the *R* and *W* groups, in the absence of reductions for earnings, is 12 times the average monthly benefit due to all control subjects in all months in which they received benefits (B*).
Values for rows (3), (6), (7), (8), (10), (11), (12), and (13) calculated as follows:

Row(3) = 12 x Row(1)/Row(2).
Row(6) = 100 x Row(5)/12.
Row(7) = [Row(9) + Row(4) x Row(3)]/[Row(10) + Row(11)].
Row(8) = Row(7) - Row(3).
Row(10) = Row(4) x Row (8).
Row(11) = Row(6) x Row (7).
Row(12) = Row(11)/Row(8).
Row(13) = Row (12)/Row(4).

H.2 Methodology for Analysis of Stage 1 Impacts for SSDI-only Subjects Who Would Not Have Volunteered if Solicited for Stage 2

Some, but not all, Stage 1 SSDI-only subjects would have volunteered for Stage 2 had they been solicited (hereafter "pseudo volunteers"), and the rest would not have volunteered ("pseudo non-volunteers"). Impacts for the pseudo volunteers in T1 are presumably similar to those for T21 subjects, because they received the same treatment. We cannot, of course, identify which SSDI-only Stage 1 subjects are in each of these two groups, but we can estimate impacts for each of the groups separately for the 2012-2015 period under the maintained assumption that the impacts for the T1 SSDI-only pseudo volunteers are the same as for T21 subjects, apart from random error. This assumption implies that the recruitment and enrollment processes for Stage 2 had no effects on the behavior of the T21 or C2 subjects. We will revisit that maintained assumption after presenting of the findings.

To make use of the maintained assumption, we take advantage of the fact that all of the point estimates for Stage 1 SSDI-only average outcomes and impacts are implicitly weighted means for the impacts of the pseudo volunteer and pseudo non-volunteer subgroups, where the weight for pseudo volunteers is the (weighted) volunteer rate for Stage 2, and the rate for the others is 1 minus the volunteer rate. Thus, if V is the volunteer rate, M_v is the average impact on an outcome for the pseudo volunteers, M_{nv} is the corresponding impact for pseudo non-volunteers, and M is the impact for all SSDI-only T1 beneficiaries, then:

(H.5) $M = V \times M_v + (1- V) \times M_{nv}$

An analogous equation applies to each average outcome or percentage, whether for treatment or control. For instance, M could stand for the percentage of treatment subjects that used the offset in or before 2015, and the equation would still hold.

Under the maintained assumption, we have point estimates for all but one value in (H.5):

- The point estimate for M is the T1 impact estimate for SSDI-only beneficiaries;
- The point estimate for V is the Stage 2 volunteer rate; and
- The point estimate for M_v is the impact estimate for T21.

For each impact or outcome, these estimates can be used to derive estimates for the following two values:

(H.6) $P_m = V \times M_v/M$ is the percentage of M attributed to the pseudo volunteers under the maintained assumption; and

(H.7) $M_{nv} = (M - V \times M_v)/(1-V)$ is the average impact (or outcome) for the pseudo non-volunteers.

The analysis below focuses on impacts and outcomes for the T21 subjects and the inferred estimates for the pseudo non-volunteers. All of the underlying point estimates for T1 SSDI-only subjects and T21 subjects are weighted so that they are consistent estimates of impacts in their respective populations. The estimated Stage 2 volunteer rate used in all of the calculations, V, is 5.321 percent.

H.3 Comparison of Stage 1 and Stage 2 Findings (T1 SSDI-only versus T21)

Unless otherwise indicated, all findings in this section follow from the maintained assumption that the average outcomes and impacts for would-be volunteers among SSDI-only T1 subjects are the same as the corresponding point estimates for T21 subjects. Sampling errors alone would lead to this assumption's violation, but not in a biased manner. At the end of the section, we discuss the possibility that the maintained assumption is substantively incorrect, and consider the implications.

Exhibit H-2 presents the results for milestones on the path toward the first benefit adjustment, based on the maintained assumption. T1 SSDI-only pseudo volunteers account for only a minority of those T1 SSDI-only subjects completing each milestone up to and including first offset use. Most notably, the maintained assumption leads to the conclusion that the pseudo volunteers account for only 21 percent of T1 SSDI-only subjects known to have used the offset as of the end of 2015 (95 percent confidence interval: 18.8 percent to 24.0 percent).[74] The corresponding percentages for the other two milestones are 18 percent for having a cessation date and 26 percent for successfully submitting an annual earnings estimate (AEE). Although the likelihood of pseudo volunteers reaching each milestone is considerably higher than for pseudo non-volunteers, as we would expect, the low volunteer rate—estimated to be 5.3 percent—implies that the pseudo volunteers nonetheless represent a minority of the SSDI-only T1 subjects reaching each milestone.

Exhibit H-2. Estimates of Milestones Reached by SSDI-only T1 Subjects, T21 Subjects, and T1 Pseudo Non-Volunteers, 2011 through 2015

Milestone	T1 SSDI-Only Percentage	T21				T1 Pseudo-Non-Volunteers (inferred)		
		Percentage	V x Percentage	% of T1 Percentage		Percentage	(1 –V) x Percentage	% of T1 Percentage
				Estimate	95% Confidence Interval			
Cessation Date in BTS (%)	7.02	23.29	1.24	17.7%	15.7% to 19.6%	6.10	5.78	82.3%
AEE Successfully Submitted to SSA (%)	3.39	16.61	0.88	26.1%	22.4% to 29.8%	2.64	2.50	73.9%
At Least One Month of Benefit Offset Adjustment Under the Offset Rules (%)	3.80	15.26	0.81	21.4%	18.4% to 24.4%	3.15	2.99	78.6%

Source: SSA administrative records from BTS (extracted in February 2018) and MBR.

Note: V is the weighted Stage 2 volunteer rate of 5.321 percent. Standard errors for percent of T1 percentage accounted for by T21 subjects are estimated with the jackknife method, derived by leaving one site out in each of ten replicates.

Unweighted sample sizes: T1 SSDI-only = 64,697; T21 = 4,854.

[74] The estimated percentage of T1 SSDI-only offset users accounted for by pseudo volunteers is calculated as P = .05321 x 15.26 / 3.80, where .05321 is the volunteer rate, 15.26 is the percentage of offset users for T21 subjects, and 3.80 is the percentage of offset users for SSDI-only T1 subjects. Since P in this case is 21.38 percent, the pseudo non-volunteers must account for the remaining 78.62 percent.

Put differently, this finding implies that roughly 4 out of 5 beneficiaries in the Stage 2 recruitment pool who ultimately would have benefited from being offset users over the study period had they volunteered and been assigned to a treatment group did not volunteer. The potential offset users among those who did not volunteer represent about three percent of all those solicited for Stage 2. That is a substantial number when compared to the 5.3 percent volunteer rate for Stage 2. Another way to illustrate the magnitude of this finding is as follows. Had the 5.3 percent of the Stage 2 recruitment pool who volunteered for Stage 2 included all those in the recruitment pool who would have used the offset had they volunteered and been assigned to T21, then the offset use rate for T21 would have been on the order of 71 percent, instead of 15 percent.[75]

The fact that a larger share of potential offset user did not volunteer for Stage 2 may be considered surprising given the BOND offset's favorable treatment of earnings relative to current law. It is also surprising in light of SSA's experience under the Accelerated Benefits (AB) demonstration, which provided health insurance to treatment subjects—newly entitled SSDI-only beneficiaries with at least 18 months left in their Medicare waiting period without other health insurance, not living in institutions, not having a representative payee, and capable of completing the informed consent process. Among those contacted and determined eligible, 99 percent volunteered (Michalopoulos et al., 2011, p. 41). An unknown number of eligible beneficiaries were lost to recruitment because the demonstration was unable to contact 18 percent of the 22,612 beneficiaries in the recruitment pool—those determined to be potentially eligible from administrative data.There are many possible explanations for whyapproximately 4 out of 5 of those who would later use the offset did not volunteer for Stage 2. These included, but are not necessarily limited to: inability of the recruitment effort to contact the beneficiary; aversion to participation in an experimental study; distrust; misunderstanding about their eligibility to participate; confusion about the offset rules and how they differed from current law; and circumstances that made BYA level earnings unlikely or unattractive over the next five or so years.

Three of these explanations stand out as explanations that would be more important for BOND than for the Accelerated Benefits demonstration:

1. the use of cell phones has made it increasingly difficult to contact beneficiaries by telephone, the primary follow-up method use for Stage 2 recruitment;

2. comparison of the offset rules to current law rules is much more complex than the Accelerated Benefits comparison of "free Medicare-like insurance" to "no health insurance"; and

3. uncertainty about earnings above BYA over the next five or so years is likely to be much greater than uncertainty about the need for health care over the next 18 months.

Because impacts on earnings and benefits are of primary interest to the evaluation, it is important to also consider the extent to which impacts on earnings and benefit outcomes for T1 SSDI-only subjects are accounted for by pseudo-volunteers—those represented by T21 subjects—and pseudo non-volunteers. Use of the offset in and of itself does not equate to an impact, and it is possible that the share of an impact

[75] The 71 percent figured was obtained by dividing the T1 SSDI-only use rate, 3.80 percent, by the volunteer rate, 5.321 percent: .0380/.05321 = .714.

for a specific outcome that is accounted for by pseudo-volunteers is proportionately larger or smaller than their estimated 21 percent share among offset users. Exhibit H-3 compares the T21 impact estimates, which are estimates for the population of pseudo-volunteers, to the estimates for pseudo non-volunteers, calculated as described in Section H.2, above. For each impact, the fourth column shows the percentage of the point estimate for T1 SSDI-only beneficiaries that is accounted for by the pseudo volunteers, as estimated by the T21 impact estimate multiplied by the volunteer rate, and the fifth column shows the 95 percent confidence interval for that estimate. The last column shows the complement of the percentage of the impact accounted for by pseudo-volunteers: the percentage of the impact accounted for by the pseudo non-volunteers. The sixth and seventh columns are inferred from the total impact in the first column, the last column, and the value of *V*.

Exhibit H-3. Estimates of Impacts for SSDI-only Stage 1 Subjects, T21 Subjects, and Stage 1 Pseudo Non-Volunteers, 2012 Through 2015

Outcome	Stage 1 SSDI-Only (T1) Impact	T21				Stage 1 Pseudo Non-Volunteers (inferred)		
		Impact	V x Impact	% of T1 Impact		Impact	(1 –V) x Impact	% of T1 Impact
				Estimate	95% CI			
Earnings and Employment Outcomes								
Total earnings ($) (January 2012–December 2015)	$51	$1,499	$80	157%	-1,287% to 1,600%	-$30	-$29	-57%
Employment during period (%)	0.442**	2.04*	0.108	25%	-6% to 55%+	0.352**	0.333	75%
Earnings above BYA during at least one year (%)	0.407**	3.98***	0.212	52%	11% to 93%+	0.207	0.196	48%
Earnings above 2x BYA during at least one year (%)	-0.0254	0.930	0.050	-195%	-8,652% to 8,262%	-0.0791	-0.075	295%
Earnings above 3x BYA during at least one year (%)	-0.109*	0.161	0.0086	-8%	-57% to 42%+	-0.125**	-0.118	108%
Disability Benefit Outcomes								
Total SSDI benefits ($)	$636***	$1,791***	$95	15%	5% to 25%+	$571***	$541	85%
At least one month with an SSDI benefit (%)	0.61***	1.11**	0.059	10%	0% to 19%+	0.550***	0.521	90%
Number of months with SSDI benefits	0.73***	2.13***	0.113	16%	12% to 20%+	0.630***	0.597	84%
Total SSI benefits	-$10	$13	$1	-7%	-50% to 36%+	-$11	-$11	107%
At least one month with an SSI benefit	-0.08	0.07	0.0037	-4%	-74% to 65%+	-0.088	-0.084	104%
Number of months with SSI benefit	-0.02	0.05	0.0025	-13%	-556% to 529%	-0.024	-0.023	113%

Source: SSA administrative records from the MEF, MBR, and SSR and the Stage 2 Baseline Survey. Point estimates for T1 SSDI-only subjects for the 2012-2015 period are not reported elsewhere. Point estimates for T21 are from Exhibits 5-5 and 5-6.

Unweighted sample sizes: T1 SSDI-only = 64, 696; C1 SSDI-only = 694,110; T21 = 4,854; C2 = 4,849.

***/**/* Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment. Statistical significance is indicated for Stage 1 SSDI-only (T1) and T21 impacts only. Standard errors of the inferred impacts for pseudo non-volunteers are estimated with the jackknife method, derived by leaving one site out in each of ten replicates.

+Based on the 95 percent confidence interval, the estimated percentage significantly less than 100% at .025 level using a one-tailed test.

Many of the percentages of impacts allocated to the pseudo volunteers and non-volunteers in this manner are not very interesting because the corresponding T1 or T21 impacts are not statistically significant.[76] There are five outcomes for which the impact estimates for T21 and T1 SSDI-only subjects are both statistically significant and therefore of greater interest.

The impact estimates for the five outcomes with statistically significant impacts for both groups imply that the beneficiaries who would volunteer for BOND are not the only beneficiaries for whom there would be substantial impacts.For each of these outcomes the upper bound of the 95 percent confidence interval for the percentage of the impact accounted for by the pseudo volunteers is less than 100 percent. That implies that we can reject the hypothesis that the pseudo-volunteers account for 100 percent of the T1 SSDI-only impact in favor of the hypothesis that they account for less than 100 percent of the impact.

For the same five outcomes, there is an interesting pattern across the point estimates for the percentages accounted for by the pseudo volunteers: they are larger for the two earnings impacts than for the three benefit impacts. Most notably, 95 percent confidence intervals for the estimates indicate that the pseudo-volunteers account for 52 percent +/- 36 percent of the impact on the percentage of T1 SSDI-only subjects with earnings above BYA, but just 15 percent +/- 8 percent of the impact on benefits. Of course population impacts could be different due to sampling error, as the confidence intervals indicate. Although the confidence interval for the share of the impact on the percentage with earnings above BYA attributed to pseudo volunteers is fairly wide, the confidence interval for the share of the impact on benefits attributed to pseudo volunteers is much narrower.

This finding is consistent with the inference reported in Section 7.2 and Section H.1 (above) for all T1 and T21 subjects: that the impacts on the percentage with earnings above BYA for T1 subjects would have to be on the order of 30 times larger for the offset to be benefit neutral, whereas for T21 subjects it would only need to be on the order of 10 times larger. Our interpretation of the findings is that, relative to T1 users of the offset among pseudo non-volunteers, users of the offset among pseudo volunteers were substantially more likely to have been induced to earn above BYA, and therefore less likely to have been recipients of a benefit windfall. The interpretation follows from the findings and the structure of the BOND offset: holding windfall increases in benefits constant, the larger the impact on the percentage with earnings above BYA, the smaller the impact on benefits—with the latter becoming negative if the former is above the benefit-neutral impact. The apparent reason why the pseudo-volunteers account for such a small share of the benefit impact is that they account for a much larger share of the impact on the percentage with earnings above BYA.

The point estimates of the impacts on earnings above three times BYA for pseudo volunteers and non-volunteers are also of some interest. They imply that pseudo non-volunteers account for a substantial share of a behavioral impact detected for T1 SSDI-only subjects—a negative effect on the percentage with earnings above three times BYA. The point estimate for the pseudo non-volunteers is negative and statistically significant, while the point estimate for the pseudo volunteers (from the T21 results) is

[76] For instance, the point estimate for earnings implies that the pseudo volunteers account for 157 percent of the T1 SSDI-only impact on earnings, whereas the pseudo non-volunteers account for negative 57 percent. This finding is not informative because neither of the underlying point estimates is statistically significant; in each case, zero is well within their 95 percent confidence intervals.

positive, but not statistically significant. It is possible that the difference in sign can be attributed to sampling error. The analysis implies, however, that the pseudo volunteers in the T1 SSDI-only sample account for less than half of the negative impact found for the whole group; the upper bound of the 95 percent confidence interval for the percentage of the T1 SSDI-only impact accounted for by the pseudo-volunteers is 42 percent.

To summarize, under the maintained assumption (i.e., that the T21 impact estimates are consistent estimates of the impacts for pseudo volunteers among SSDI-only T1 subjects), we find that the pseudo volunteers represent only about 1 in 20 BOND-eligible SSDI-only beneficiaries (an estimated 5.3 percent), and about 1 out of 5 of those who would be offset users under a national policy (an estimated 21 percent). They account for about half of the positive impact on the percentage with earnings above BYA (95 percent confidence interval: 52 percent +/- 36 percent) and, as a consequence, a lower share of impacts on benefits (15 percent +/- 8 percent).

An important caveat to these findings is that these estimates assume that the T21 impact estimates represent consistent estimates of the corresponding Stage 1 impacts for pseudo volunteers among SSDI-only beneficiaries. There are some reasons to doubt this assumption, in which case the impacts for pseudo volunteers might have differed systematically from the impacts for T21 subjects. Specifically, the pseudo volunteers included in Stage 1 were not recruited, and did not go through the informed consent and enrollment process. That process itself could have affected the behavior of both T21 and C2 subjects. Before random assignment, all volunteers had the opportunity to learn about both BOND offset and current law rules through an informed consent process—a process that was not available to Stage 1 subjects. Hence, after random assignment, both types of subjects may have had a better understanding of the rules that applied to their group than their pseudo volunteers counterparts assigned to Stage 1. As indicated in Chapter 4, it is also possible that the enrollment process left some subjects confused about which rules applied to them. The effect of the enrollment process on the size of impacts for specific outcomes could be in either direction.

The above comparison of Stage 1 and 2 findings has implications for the use of informed volunteers in SSA demonstrations to test changes in program work incentives. First, the comparisons suggest that many—perhaps most—of those whose benefits will be affected may not volunteer, especially if the treatment offered is not unambiguously favorable to all prospective volunteers. Second, the behavioral responses of those among the pseudo non-volunteers whose benefits would be affected by the change in the work incentive might be qualitatively different than those of the volunteers. Both findings pose challenges for producing projections of impacts of a nationwide change in the work incentives from the impacts observed for volunteers. This observation is pertinent to SSA's test of the POD offset, which will only use volunteers. The BOND data offer a rare, possibly unique opportunity to test how well the volunteers represent those whose key outcomes will be affected by the intervention. They show that, even when the intervention is unambiguously favorable to those in the recruitment pool, many such individuals may not volunteer—a large majority in the case of BOND.

Appendix I. Additional Analysis of Mortality in the Study Sample

This appendix examines the extent to which evaluation results were affected by mortality of study subjects. As shown in Exhibits F-16 and F-17 in Appendix F, we do not detect an impact of either the benefit offset or enhanced counseling on mortality in Stages 1 or 2. Therefore, the main analysis does not adjust for the mortality of subjects in any manner. This appendix presents the results of several additional checks of how mortality might have influenced the study results. Specifically, we examined:

- whether the timing of mortality differed across assignment groups,
- whether annual samples of subjects retained their balance in baseline characteristics across assignment groups after removing all subjects who had died before the end of the year, and
- whether impact estimates for these annual samples differed from the full-sample impact estimates.

In neither Stage 1 nor Stage 2 did the timing of mortality differ to a statistically significant extent across assignment groups. When we formed a series of subgroups based on mortality, the assignment groups retained balance in all subgroups for both stages. Finally, although some impact estimates for subgroups with no mortality were statistically significantly different from corresponding full-sample impact estimates (in 38 of 275 tests, or about 14 percent of tests), almost all differences were small relative to the size of the full-sample impact estimates.

We discuss Stage 1 and Stage 2 results in turn.

I.1 Stage 1

Exhibit I-1 shows, by assignment group, the number and weighted percentage of subjects who died in each month of the observation period. In total, about 9 percent of subjects died in the T1 and C1 groups. We did not detect a difference in the timing of death between the T1 and C1 groups. Although about 9 percent of subjects died in each group by the end of 2015, many of these deaths occurred later in the observation period. When deaths are weighted by time during the observation period, 4.7 percent of person-days in each assignment group are affected by mortality.

In order to examine the extent to which mortality affected full-sample results, we formed a series of subgroups. For each calendar year of the Stage 1 observation period (i.e., for the five years of 2011 to 2015), we formed subgroups of:

- deceased prior to the end of the year, and
- non-deceased for the full year.

As seen in Exhibit I-2, later years have larger sample sizes for the "deceased prior to the end of year" subgroup than do earlier years. This is because as more beneficiaries die, this group grows. Correspondingly, later years have smaller sample sizes for the "non-deceased for full year" subgroup than do earlier years.

We note that these subgroups are endogenous, because they are based on a characteristic that becomes known after random assignment. Therefore, within each subgroup, balance in baseline characteristics

between assignment groups may not occur if mortality occurs differentially between assignment groups. Exhibit I-2 shows that balance in baseline characteristics is maintained within all of the subgroups. (This is seen by the F-statistic p-values greater than 0.10 in columns 3 and 6.)

In Exhibit I-3, we compare the full-sample impact estimates on earnings-related outcomes to the impact estimates for the subgroup that was non-deceased for the full year. Out of the 25 impact estimates, 5 impact estimates are statistically significantly different between the full sample and the non-deceased subgroup for that year. All five of these differences are small relative to the full-sample impact estimates. The same is true for the 8 statistically significant differences (out of 30 tests) for benefit-related outcomes shown in Exhibit I-4.[77] We conclude that mortality has only a minor effect on the Stage 1 full-sample results and that the overall pattern of results is unchanged when mortality is taken into account.

I.2 Stage 2

Corresponding to Exhibit I-1 for Stage 1, Exhibit I-5 shows, by assignment group, the number and weighted percentage of Stage 2 subjects who died in each year of the observation period.[78] In total, about 6 percent of subjects died in Stage 2 by the end of 2015. We do not detect a difference in the timing of death between the T21, T22, and C2 groups. When deaths are weighted by time during the observation period, mortality affects 2.9 percent of person-days in the T21 group, 2.5 percent of person-days in the T22 group, and 3.1 percent of person-days in the C2 group.

Using the same method as for Stage 1, we form a series of subgroups based on mortality. Exhibit I-6 shows the sample sizes of these subgroups and also shows that balance in baseline characteristics is maintained within all of the subgroups (seen in p-values greater than 0.10 in columns 4 and 8).

Exhibits I-7 to I-14 compare full-sample impact estimates to the impact estimates for the subgroup that was non-deceased for the full year. In 25 of 220 tests (11 percent), the full sample impact estimate is statistically significantly different from the impact estimate for the non-deceased subgroup. In 20 of these 25 cases, the differences were small relative to the size of the full-sample impact estimates.[79,80] Therefore,

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[77] For example, in four of the five years examined, the impact on number of months with SSDI benefits for the full sample is statistically significantly smaller than the impact for the non-deceased for the full year subgroup. However, in all of these years, the difference in impacts is less than one day per year, small differences compared to the size of the impacts. These differences are inconsequential for policymaking.

[78] The number of deaths in each month are much lower in Stage 2 than in Stage 1 because the Stage 2 sample is much smaller than the Stage 1 sample. Because the Stage 2 monthly counts of deaths are too low to support a statistical test across assignment groups, we aggregate counts of death to a yearly basis.

[79] The exceptions (where the difference in impacts estimates are not small relative to the full-sample impact estimates) are Exhibit I-8, 2014 Number of months with SSI payments; Exhibit I-9, 2013 Earnings above 2x BYA and 2013 Earnings above 3x BYA; Exhibit I-11, 2013 Earnings above 3x BYA; and Exhibit I-14, 2014 Number of months with SSI payments.

[80] For example, 5 of the 20 cases where differences in impacts are small relative to the full-sample impacts are for the outcome number of months SSDI payments. In each of these five cases, the impact on number of months with SSDI benefits for the full sample is statistically significantly different than the impact for the non-deceased for the full year subgroup. However, in all five of these cases, the difference in impacts is less than two days per

as for Stage 1, we conclude that mortality has only a minor effect on the Stage 2 full-sample results and that the overall pattern of results is unchanged when mortality is taken into account.

Exhibit I-1. Stage 1 Dates of Death by Month of Death and Assignment Group

Month of Death	Unweighted Number of Subjects Deceased in Month		Weighted Percent Deceased in Month	
	T1 Group	C1 Group	T1 Group	C1 Group
May-11	181	1,455	0.21	0.18
Jun-11	150	1,494	0.18	0.17
Jul-11	174	1,619	0.22	0.19
Aug-11	185	1,574	0.21	0.19
Sep-11	138	1,462	0.15	0.17
Oct-11	152	1,539	0.20	0.18
Nov-11	131	1,501	0.14	0.18
Dec-11	139	1,639	0.17	0.19
Jan-12	131	1,480	0.16	0.17
Feb-12	150	1,454	0.18	0.17
Mar-12	146	1,477	0.18	0.17
Apr-12	153	1,367	0.18	0.16
May-12	127	1,477	0.16	0.17
Jun-12	142	1,392	0.17	0.16
Jul-12	138	1,447	0.16	0.16
Aug-12	137	1,458	0.17	0.17
Sep-12	124	1,355	0.15	0.16
Oct-12	129	1,374	0.16	0.16
Nov-12	135	1,490	0.17	0.17
Dec-12	131	1,536	0.16	0.17
Jan-13	138	1,691	0.16	0.19
Feb-13	128	1,425	0.17	0.16
Mar-13	135	1,479	0.17	0.17
Apr-13	120	1,421	0.15	0.16
May-13	137	1,380	0.18	0.16
Jun-13	111	1,308	0.14	0.15
Jul-13	127	1,409	0.17	0.16
Aug-13	123	1,329	0.15	0.15
Sep-13	107	1,336	0.14	0.15
Oct-13	120	1,360	0.19	0.15
Nov-13	114	1,327	0.15	0.15
Dec-13	147	1,531	0.19	0.17
Jan-14	142	1,627	0.19	0.18
Feb-14	118	1,413	0.15	0.16
Mar-14	109	1,462	0.13	0.17

year, small differences compared to the size of the impacts. These differences are inconsequential for policymaking.

Month of Death	Unweighted Number of Subjects Deceased in Month		Weighted Percent Deceased in Month	
	T1 Group	C1 Group	T1 Group	C1 Group
Apr-14	109	1,409	0.15	0.16
May-14	133	1,377	0.17	0.16
Jun-14	97	1,304	0.12	0.15
Jul-14	131	1,351	0.16	0.15
Aug-14	118	1,382	0.14	0.16
Sep-14	131	1,380	0.16	0.16
Oct-14	117	1,461	0.14	0.16
Nov-14	123	1,332	0.17	0.15
Dec-14	131	1,535	0.16	0.17
Jan-15	150	1,536	0.20	0.18
Feb-15	133	1,494	0.16	0.17
Mar-15	150	1,588	0.18	0.18
Apr-15	138	1,451	0.17	0.17
May-15	101	1,431	0.13	0.16
Jun-15	109	1,413	0.16	0.16
Jul-15	128	1,364	0.15	0.15
Aug-15	140	1,403	0.18	0.16
Sep-15	113	1,383	0.14	0.16
Oct-15	143	1,467	0.18	0.16
Nov-15	133	1,399	0.16	0.16
Dec-15	118	1,396	0.14	0.16
Total	7,415	80,944	9.24	9.26

Source: SSA administrative records from the Numident.

Notes: Distributions of monthly death percentages are not statistically significantly different across T1 and C1 groups (p-value of chi-squared test [with controls for site] = 0.649). Percentages are weighted to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment.

Exhibit I-2. Stage 1 Balance of Baseline Characteristics Across Assignment Groups Within Subgroups Defined by Mortality

Year	Deceased Prior to End of Year			Non-Deceased for Full Year		
	T1 Sample Size (1)	C1 Sample Size (2)	F-statistic p-value for Test of Balance in Baseline Characteristics Across T1 and C1 Groups (3)	T1 Sample Size (4)	C1 Sample Size (5)	F-statistic p-value for Test of Balance in Baseline Characteristics Across T1 and C1 Groups (6)
2011	1,250	12,283	0.712	75,851	879,146	0.483
2012	2,893	29,590	0.562	74,208	861,839	0.446
2013	4,400	46,586	0.484	72,701	844,843	0.538
2014	5,859	63,619	0.700	71,242	827,810	0.570
2015	7,415	80,944	0.738	69,686	810,485	0.647

Source: SSA administrative records from the MBR and Numident.

Notes: Test for balance in baseline characteristics controls for site and includes all non-site characteristics presented in Exhibit B-6.

Exhibit I-3. Stage 1 Comparison of Annual Earnings-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	Standard Error (4)	T1 Mean (5)	C1 Mean (6)	Impact Estimate (7)	Standard Error (8)	
Earnings ($ in year)									
2011	$1,172	$1,195	$-24	$19	$1,182	$1,204	$-22	$19	$-1
2012	$1,236	$1,241	$-5	$24	$1,275	$1,276	$-1	$26	$-3
2013	$1,309	$1,299	$10	$23	$1,381	$1,363	$18	$24	$-8†
2014	$1,395	$1,379	$16	$28	$1,499	$1,477	$22	$29	$-7
2015	$1,520	$1,508	$12	$27	$1,671	$1,652	$20	$29	$-8
Employment (% in year)									
2011	14.22	14.10	0.12	0.11	14.31	14.19	0.12	0.12	0.00
2012	13.67	13.52	0.15	0.12	14.04	13.91	0.13	0.12	0.02
2013	13.51	13.33	0.18	0.13	14.22	13.99	0.22	0.13	-0.05†
2014	13.21	12.93	0.29*	0.13	14.18	13.85	0.33**	0.14	-0.05†
2015	13.25	12.99	0.26*	0.14	14.52	14.22	0.30*	0.14	-0.04
Earnings above BYA(% in year)									
2011	2.24	2.26	-0.02	0.09	2.26	2.27	-0.02	0.09	-0.00
2012	2.46	2.42	0.03	0.09	2.53	2.49	0.03	0.09	0.00
2013	2.65	2.54	0.11	0.07	2.79	2.67	0.13	0.07	-0.02
2014	2.90	2.69	0.20**	0.07	3.12	2.89	0.23**	0.08	-0.03††
2015	3.23	2.97	0.27***	0.08	3.56	3.25	0.31***	0.08	-0.04†††
Earnings above 2x BYA(% in year)									
2011	0.92	0.96	-0.04	0.05	0.93	0.96	-0.04	0.05	-0.00
2012	1.03	1.09	-0.06	0.05	1.06	1.12	-0.06	0.05	-0.00
2013	1.13	1.18	-0.06	0.04	1.19	1.24	-0.05	0.05	-0.01
2014	1.23	1.29	-0.06	0.04	1.32	1.38	-0.05	0.05	-0.00
2015	1.31	1.44	-0.13**	0.05	1.44	1.57	-0.13**	0.05	0.00
Earnings above 3x BYA(% in year)									
2011	0.50	0.53	-0.03	0.02	0.51	0.53	-0.03	0.02	-0.00
2012	0.56	0.61	-0.05	0.03	0.58	0.63	-0.05	0.03	-0.00
2013	0.62	0.65	-0.03	0.03	0.66	0.68	-0.02	0.03	-0.01
2014	0.64	0.72	-0.07*	0.03	0.69	0.76	-0.07*	0.04	-0.00
2015	0.71	0.80	-0.09**	0.04	0.79	0.87	-0.09**	0.04	0.00

Source: SSA administrative records from the MEF, MBR, and Numident.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T1 = 77,101; C1 = 891,429. Non-deceased 2011: T1 = 75,851; C1 = 879,146. Non-deceased 2012: T1 = 74,208; C1 = 861,839. Non-deceased 2013: T1 = 72,701; C1 = 844,843. Non-deceased 2014: T1 = 71,242; C1 = 827,810. Non-deceased 2015: T1 = 69,686; C1 = 810,485.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-4. Stage 1 Comparison of Annual Benefit-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact
	T1 Mean (1)	C1 Mean (2)	Impact Estimate (3)	Standard Error (4)	T1 Mean (5)	C1 Mean (6)	Impact Estimate (7)	Standard Error (8)	(9)
SSDI Benefits Due ($ for year)									
2011	$7,929	$7,881	$47***	$10	$7,975	$7,923	$52***	$9	$-5†
2012	$11,844	$11,736	$108***	$22	$12,125	$12,008	$116***	$16	$-8
2013	$11,636	$11,484	$152***	$31	$12,160	$12,004	$156***	$19	$-3
2014	$11,386	$11,215	$172***	$39	$12,140	$11,962	$178***	$22	$-6
2015	$11,360	$11,175	$185***	$49	$12,361	$12,171	$190***	$21	$-5
Number of Months with SSDI Payments Due									
2011	7.47	7.42	0.05***	0.01	7.52	7.46	0.06***	0.01	-0.00†††
2012	11.02	10.89	0.13***	0.02	11.29	11.15	0.14***	0.01	-0.01†
2013	10.78	10.61	0.17***	0.03	11.27	11.09	0.18***	0.02	-0.01
2014	10.55	10.35	0.20***	0.03	11.25	11.04	0.21***	0.02	-0.02†††
2015	10.30	10.08	0.22***	0.04	11.22	10.98	0.23***	0.02	-0.02†††
Any SSDI Receipt Due (% in year)									
2011	94.62	93.99	0.63***	0.11	94.59	93.96	0.63***	0.11	0.00
2012	93.32	92.54	0.78***	0.13	94.69	93.85	0.84***	0.10	-0.06
2013	91.23	90.17	1.06***	0.18	94.47	93.33	1.14***	0.11	-0.08
2014	89.22	87.94	1.28***	0.25	94.34	92.89	1.45***	0.13	-0.17††
2015	87.27	85.67	1.60***	0.31	94.06	92.37	1.69***	0.15	-0.10†
SSI Benefits Due ($ for year)									
2011	$302	$299	$3	$5	$305	$302	$3	$5	$-0
2012	$441	$440	$1	$8	$453	$452	$2	$8	$-1
2013	$423	$428	$-5	$8	$444	$447	$-3	$8	$-2
2014	$403	$406	$-3	$8	$432	$433	$-1	$8	$-2
2015	$375	$376	$-1	$7	$410	$410	$0	$8	$-1
Number of Months with SSI Payments Due									
2011	1.35	1.36	-0.01	0.01	1.36	1.37	-0.00	0.01	-0.00
2012	1.96	1.97	-0.01	0.01	2.02	2.02	-0.00	0.01	-0.00
2013	1.88	1.90	-0.02	0.01	1.97	1.98	-0.01	0.01	-0.01
2014	1.79	1.81	-0.02	0.01	1.91	1.92	-0.01	0.01	-0.01†
2015	1.66	1.67	-0.01	0.02	1.81	1.82	-0.01	0.02	-0.00
Any SSI Receipt Due (% in year)									
2011	18.01	18.01	0.00	0.07	18.10	18.10	-0.00	0.07	0.00
2012	17.64	17.71	-0.08	0.09	18.00	18.05	-0.05	0.07	-0.03
2013	16.89	16.96	-0.06	0.10	17.53	17.56	-0.03	0.09	-0.03
2014	16.08	16.28	-0.20	0.13	17.08	17.21	-0.12	0.11	-0.08
2015	14.76	14.90	-0.14	0.13	16.01	16.10	-0.10	0.13	-0.04

Source: SSA administrative records from the MBR, SSR, and Numident.

Notes: Benefit outcomes are based on benefits paid during the 2011-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national beneficiary population in the month of random assignment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T1 = 77,101; C1 = 891,429. Non-deceased 2011: T1 = 75,851; C1 = 879,146. Non-deceased 2012: T1 = 74,208; C1 = 861,839. Non-deceased 2013: T1 = 72,701; C1 = 844,843. Non-deceased 2014: T1 = 71,242; C1 = 827,810. Non-deceased 2015: T1 = 69,686; C1 = 810,485.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-5. Stage 2 Dates of Death by Year of Death and Assignment Group

Year of Death	Unweighted Number of Subjects Deceased in Year			Weighted Percent Deceased in Year		
	T21 Group	T22 Group	C2 Group	T21 Group	T22 Group	C2 group
2011 or 2012	63	37	66	1.24	1.19	1.41
2013	78	47	84	1.92	1.19	1.50
2014	64	50	87	1.24	1.33	1.70
2015	81	52	88	1.52	1.83	1.91
Total	286	186	325	5.92	5.54	6.52

Source: SSA administrative records from the Numident.

Notes: Distributions of yearly death percentages are not statistically significantly different across T21, T22, and C2 groups (p-value of chi-squared test [with controls for site] = 0.235). Percentages are weighted to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.

Exhibit I-6. Stage 2 Balance of Baseline Characteristics Across Assignment Groups Within Subgroups Defined by Mortality

Year	Deceased Prior to End of Year				Non-deceased for Full Year			
	T21 Sample Size (1)	T22 Sample Size (2)	C22 Sample size (3)	F-statistic p-value for Test of Balance in Baseline Characteristics Across T21, T22, and C2 Groups (4)	T21 Sample Size (5)	T22 Sample Size (6)	C22 Sample Size (7)	F-statistic p-value for Test of Balance in Baseline Characteristics Across T21, T22, and C2 Groups (8)
2012	63	37	66	0.968	4,791	3,004	4,783	0.706
2013	141	84	150	0.803	4,713	2,957	4,699	0.704
2014	205	134	237	0.869	4,649	2,907	4,612	0.693
2015	286	186	325	0.948	4,568	2,855	4,524	0.585

Source: SSA administrative records from the MBR and Numident and the Stage 2 Baseline Survey.

Notes: Test for balance in baseline characteristics controls for site and includes all non-site characteristics presented in Exhibit B-7 except indicators for respiratory impairments, severe visual impairments, disabled adult child, disabled widow beneficiary, dually-entitled disabled adult child, and dually-entitled disabled widow beneficiary. These exceptions are made because they have a zero cell in at least one year.

Exhibit I-7. Stage 2 Comparison of Annual Earnings-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T21 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T21 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	
Earnings ($ in year)									
2012	$4,124	$3,761	$364*	$169	$4,120	$3,798	$322	$188	$41
2013	$4,549	$4,132	$417*	$192	$4,654	$4,248	$406*	$212	$11
2014	$4,884	$4,432	$453*	$221	$5,037	$4,610	$427	$241	$26
2015	$5,152	$4,829	$323	$254	$5,435	$5,145	$290	$286	$33
Employment (% in year)									
2012	40.46	38.59	1.87*	0.86	40.65	38.80	1.85*	0.87	0.02
2013	40.16	37.43	2.73**	0.96	41.10	38.34	2.76**	0.97	-0.03
2014	38.95	36.57	2.38**	0.99	40.41	38.01	2.40**	1.01	-0.02
2015	36.77	35.59	1.18	1.06	38.85	37.74	1.11	1.06	0.07
Earnings above BYA (% in year)									
2012	10.33	8.94	1.39**	0.57	10.31	9.06	1.25*	0.57	0.14
2013	11.13	9.09	2.05***	0.62	11.38	9.36	2.03**	0.63	0.02
2014	11.80	9.19	2.60***	0.72	12.21	9.55	2.66***	0.78	-0.05
2015	12.46	9.85	2.61***	0.76	13.18	10.50	2.68**	0.87	-0.07
Earnings above 2x BYA (% in year)									
2012	3.31	2.69	0.62	0.38	3.25	2.73	0.52	0.42	0.10
2013	4.13	3.57	0.56	0.41	4.20	3.68	0.52	0.42	0.04
2014	4.49	3.90	0.59	0.44	4.60	4.06	0.54	0.46	0.05
2015	5.07	4.60	0.48	0.52	5.33	4.92	0.41	0.59	0.06
Earnings above 3x BYA (% in year)									
2012	1.15	1.00	0.15	0.21	1.12	1.01	0.11	0.21	0.04
2013	1.55	1.59	-0.04	0.27	1.57	1.64	-0.06	0.28	0.03
2014	1.89	1.93	-0.05	0.31	1.92	2.00	-0.08	0.32	0.03
2015	2.23	2.27	-0.04	0.38	2.33	2.43	-0.09	0.44	0.06

Source: SSA administrative records from the MEF, MBR, and Numident and the Stage 2 Baseline Survey.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T21 = 4,854; C2 = 4,849. Non-deceased 2012: T21 = 4,791; C2 = 4,783. Non-deceased 2013: T21 = 4,713; C2 = 4,699. Non-deceased 2014: T21 = 4,649; C2 = 4,612. Non-deceased 2015: T21 = 4,568; C2 = 4,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test. c

Exhibit I-8. Stage 2 Comparison of Annual Benefit-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T21 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact
	T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T21 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	(9)
SSDI Benefits Due ($ for year)									
2012	$13,110	$12,911	$199	$112	$13,188	$12,997	$191	$118	$8
2013	$12,955	$12,493	$462***	$133	$13,202	$12,755	$447***	$132	$15
2014	$12,678	$12,180	$498***	$129	$13,176	$12,634	$542***	$120	$-45††
2015	$12,680	$12,048	$632***	$139	$13,352	$12,738	$613***	$129	$19
Number of Months with SSDI Payments Due									
2012	11.36	11.12	0.24***	0.06	11.44	11.19	0.24***	0.05	-0.00
2013	11.27	10.73	0.54***	0.07	11.51	10.96	0.55***	0.06	-0.02
2014	11.06	10.44	0.62***	0.08	11.50	10.83	0.67***	0.06	-0.05†††
2015	10.84	10.11	0.73***	0.09	11.43	10.68	0.74***	0.07	-0.01††
Any SSDI Receipt Due (% in year)									
2012	96.33	95.55	0.78	0.49	96.59	95.78	0.81*	0.43	-0.03
2013	95.40	92.84	2.56***	0.58	96.69	94.12	2.57***	0.56	-0.01
2014	93.64	89.82	3.82***	0.63	96.76	92.50	4.26***	0.51	-0.44††
2015	92.19	87.07	5.12***	0.69	96.45	91.17	5.28***	0.54	-0.16†
SSI Benefits Due ($ for year)									
2012	$35	$25	$10	$8	$36	$25	$10	$8	$-0
2013	$35	$33	$2	$8	$36	$34	$2	$8	$-0
2014	$38	$36	$3	$9	$41	$37	$4	$9	$-1
2015	$34	$36	$-1	$11	$37	$38	$-1	$12	$-0
Number of Months with SSI Payments Due									
2012	0.18	0.15	0.03	0.03	0.18	0.15	0.03	0.03	-0.00
2013	0.18	0.18	0.00	0.03	0.19	0.18	0.00	0.03	0.00
2014	0.20	0.19	0.00	0.03	0.21	0.20	0.01	0.03	-0.01†
2015	0.19	0.18	0.01	0.03	0.20	0.19	0.01	0.04	-0.00
Any SSI Receipt Due (% in year)									
2012	2.12	1.64	0.48	0.30	2.15	1.64	0.51	0.31	-0.02
2013	2.01	2.08	-0.07	0.32	1.97	2.12	-0.15	0.33	0.09
2014	2.02	2.24	-0.23	0.38	2.14	2.29	-0.15	0.41	-0.08
2015	1.89	1.85	0.04	0.36	1.96	1.96	-0.00	0.39	0.04

Source: SSA administrative records from the MBR, SSR, and Numident and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2011-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T21 = 4,854; C2 = 4,849. Non-deceased 2012: T21 = 4,791; C2 = 4,783. Non-deceased 2013: T21 = 4,713; C2 = 4,699. Non-deceased 2014: T21 = 4,649; C2 = 4,612. Non-deceased 2015: T21 = 4,568; C2 = 4,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-9. Stage 2 Comparison of Annual Earnings-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	
Earnings ($ in year)									
2012	$4,184	$3,761	$423	$283	$4,182	$3,798	$384	$291	$39
2013	$4,534	$4,132	$402	$302	$4,580	$4,248	$333	$304	$69†
2014	$4,852	$4,432	$421	$322	$4,981	$4,610	$371	$312	$50
2015	$5,249	$4,829	$420	$300	$5,488	$5,145	$343	$307	$77
Employment (% in year)									
2012	40.22	38.59	1.62	1.11	40.35	38.80	1.55	1.10	0.07
2013	38.89	37.43	1.45	1.07	39.51	38.34	1.17	1.09	0.29
2014	38.55	36.57	1.98	1.12	39.78	38.01	1.77	1.14	0.21
2015	37.95	35.59	2.36*	1.14	39.75	37.74	2.02	1.18	0.34
Earnings above BYA (% in year)									
2012	10.09	8.94	1.16	0.74	10.06	9.06	1.00	0.80	0.15
2013	11.35	9.09	2.27**	0.74	11.49	9.36	2.13**	0.74	0.14
2014	11.87	9.19	2.68***	0.80	12.23	9.55	2.69***	0.80	-0.01
2015	12.82	9.85	2.97***	0.78	13.47	10.50	2.97***	0.82	-0.00
Earnings above 2x BYA (% in year)									
2012	2.70	2.69	0.00	0.37	2.67	2.73	-0.06	0.37	0.06
2013	3.75	3.57	0.18	0.52	3.73	3.68	0.05	0.54	0.13†
2014	4.24	3.90	0.33	0.52	4.34	4.06	0.27	0.53	0.06
2015	4.74	4.60	0.14	0.52	4.92	4.92	-0.00	0.55	0.14
Earnings above 3x BYA (% in year)									
2012	1.42	1.00	0.42	0.37	1.40	1.01	0.39	0.38	0.03
2013	1.67	1.59	0.08	0.35	1.64	1.64	0.01	0.35	0.07†
2014	1.78	1.93	-0.16	0.36	1.79	2.00	-0.21	0.35	0.05
2015	2.16	2.27	-0.11	0.43	2.20	2.43	-0.23	0.45	0.12

Source: SSA administrative records from the MEF, MBR, and Numident and the Stage 2 Baseline Survey.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 = 3,041; C2 = 4,849. Non-deceased 2012: T22 = 3,004; C2 = 4,783. Non-deceased 2013: T22 = 2,957; C2 = 4,699. Non-deceased 2014: T22 = 2,907; C2 = 4,612. Non-deceased 2015: T22 = 2,855; C2 = 4,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-10. Stage 2 Comparison of Annual Benefit-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact
	T22 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	(9)
SSDI Benefits Due ($ for year)									
2012	$13,203	$12,911	$292**	$129	$13,278	$12,997	$281*	$126	$11
2013	$13,019	$12,493	$526***	$137	$13,218	$12,755	$463***	$131	$63
2014	$12,719	$12,180	$540***	$145	$13,096	$12,634	$462***	$137	$77
2015	$12,689	$12,048	$640***	$156	$13,288	$12,738	$550***	$149	$90
Number of Months with SSDI Payments Due									
2012	11.36	11.12	0.24***	0.07	11.44	11.19	0.25***	0.07	-0.01
2013	11.25	10.73	0.52***	0.08	11.44	10.96	0.49***	0.09	0.03
2014	11.06	10.44	0.62***	0.09	11.40	10.83	0.57***	0.07	0.05
2015	10.81	10.11	0.70***	0.10	11.33	10.68	0.65***	0.08	0.05
Any SSDI Receipt Due (% in year)									
2012	96.14	95.55	0.59	0.51	96.55	95.78	0.77	0.51	-0.18
2013	95.17	92.84	2.33***	0.59	96.31	94.12	2.19***	0.57	0.14
2014	93.76	89.82	3.94***	0.68	96.10	92.50	3.61***	0.57	0.33
2015	91.99	87.07	4.93***	0.75	95.65	91.17	4.49***	0.61	0.44
SSI Benefits Due ($ for year)									
2012	$26	$25	$1	$8	$27	$25	$2	$8	$-1
2013	$38	$33	$5	$10	$38	$34	$5	$10	$-0
2014	$40	$36	$4	$11	$41	$37	$4	$12	$-0
2015	$36	$36	$0	$13	$37	$38	$-1	$13	$1
Number of Months with SSI Payments Due									
2012	0.17	0.15	0.02	0.04	0.18	0.15	0.03	0.04	-0.00†
2013	0.23	0.18	0.05	0.04	0.23	0.18	0.05	0.04	-0.00
2014	0.22	0.19	0.02	0.04	0.22	0.20	0.03	0.04	-0.00
2015	0.19	0.18	0.01	0.04	0.20	0.19	0.01	0.04	0.00
Any SSI Receipt Due (% in year)									
2012	1.98	1.64	0.34	0.37	2.02	1.64	0.38	0.37	-0.04
2013	2.34	2.08	0.26	0.42	2.40	2.12	0.28	0.43	-0.02
2014	2.16	2.24	-0.09	0.42	2.23	2.29	-0.05	0.43	-0.04
2015	1.87	1.85	0.02	0.39	1.94	1.96	-0.02	0.41	0.04

Source: SSA administrative records from the MBR, SSR, and Numident and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2011-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 = 3,041; C2 = 4,849. Non-deceased 2012: T22 = 3,004; C2 = 4,783. Non-deceased 2013: T22 = 2,957; C2 = 4,699. Non-deceased 2014: T22 = 2,907; C2 = 4,612. Non-deceased 2015: T22 = 2,855; C2 = 4,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-11. Stage 2 Comparison of Annual Earnings-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 versus T21)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 Mean (5)	T21 Mean (6)	Impact Estimate (7)	Standard Error (8)	
Earnings ($ in year)									
2012	$4,184	$4,124	$60	$200	$4,182	$4,120	$62	$201	$-2
2013	$4,534	$4,549	$-15	$216	$4,580	$4,654	$-74	$213	$58†
2014	$4,852	$4,884	$-32	$237	$4,981	$5,037	$-56	$194	$24
2015	$5,249	$5,152	$97	$265	$5,488	$5,435	$52	$226	$45
Employment (% in year)									
2012	40.22	40.46	-0.24	1.33	40.35	40.65	-0.30	1.37	0.05
2013	38.89	40.16	-1.27	1.09	39.51	41.10	-1.59***	0.41	0.31
2014	38.55	38.95	-0.40	1.14	39.78	40.41	-0.63	0.46	0.23
2015	37.95	36.77	1.18	1.15	39.75	38.85	0.91	0.87	0.27
Earnings above BYA (% in year)									
2012	10.09	10.33	-0.23	0.67	10.06	10.31	-0.25	0.57	0.02
2013	11.35	11.13	0.22	0.73	11.49	11.38	0.10	0.62	0.12
2014	11.87	11.80	0.08	0.77	12.23	12.21	0.03	0.72	0.05
2015	12.82	12.46	0.36	0.81	13.47	13.18	0.29	0.73	0.07
Earnings above 2x BYA (% in year)									
2012	2.70	3.31	-0.61	0.39	2.67	3.25	-0.58*	0.31	-0.03
2013	3.75	4.13	-0.38	0.46	3.73	4.20	-0.47	0.28	0.09††
2014	4.24	4.49	-0.25	0.50	4.34	4.60	-0.27	0.40	0.01
2015	4.74	5.07	-0.33	0.54	4.92	5.33	-0.42	0.53	0.08
Earnings above 3x BYA (% in year)									
2012	1.42	1.15	0.27	0.25	1.40	1.12	0.28	0.21	-0.01
2013	1.67	1.55	0.12	0.30	1.64	1.57	0.07	0.22	0.05††
2014	1.78	1.89	-0.11	0.34	1.79	1.92	-0.12	0.29	0.01
2015	2.16	2.23	-0.07	0.37	2.20	2.33	-0.13	0.36	0.06

Source: SSA administrative records from the MEF, MBR, and Numident and the Stage 2 Baseline Survey.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 = 3,041; T21 = 4,854. Non-deceased 2012: T22 = 3,004; T21 = 4,791. Non-deceased 2013: T22 = 2,957; T21 = 4,713. Non-deceased 2014: T22 = 2,907; T21 = 4,649. Non-deceased 2015: T22 = 2,855; T21 = 4,568.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-12. Stage 2 Comparison of Annual Benefit-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 versus T21)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T22 Mean (1)	T21 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 Mean (5)	T21 Mean (6)	Impact Estimate (7)	Standard Error (8)	
SSDI Benefits Due ($ for year)									
2012	$13,203	$13,110	$92	$140	$13,278	$13,188	$90	$135	$3
2013	$13,019	$12,955	$64	$149	$13,218	$13,202	$16	$148	$48
2014	$12,719	$12,678	$42	$180	$13,096	$13,176	$-80	$173	$122
2015	$12,689	$12,680	$9	$192	$13,288	$13,352	$-63	$183	$72
Number of Months with SSDI Payments Due									
2012	11.36	11.36	0.00	0.06	11.44	11.44	0.01	0.05	-0.00
2013	11.25	11.27	-0.02	0.07	11.44	11.51	-0.07	0.05	0.05
2014	11.06	11.06	-0.00	0.08	11.40	11.50	-0.10*	0.05	0.10
2015	10.81	10.84	-0.03	0.09	11.33	11.43	-0.09	0.05	0.06
Any SSDI Receipt Due (% in year)									
2012	96.14	96.33	-0.19	0.51	96.55	96.59	-0.04	0.39	-0.15
2013	95.17	95.40	-0.23	0.57	96.31	96.69	-0.38	0.37	0.15
2014	93.76	93.64	0.12	0.66	96.10	96.76	-0.65	0.44	0.78
2015	91.99	92.19	-0.20	0.71	95.65	96.45	-0.80*	0.43	0.60
SSI Benefits Due ($ for year)									
2012	$26	$35	$-9	$9	$27	$36	$-9	$9	$-0
2013	$38	$35	$3	$11	$38	$36	$3	$10	$0
2014	$40	$38	$1	$12	$41	$41	$-0	$12	$1
2015	$36	$34	$2	$15	$37	$37	$-0	$16	$2
Number of Months with SSI Payments Due									
2012	0.17	0.18	-0.01	0.04	0.18	0.18	-0.01	0.03	-0.00†
2013	0.23	0.18	0.04	0.05	0.23	0.19	0.05	0.05	-0.00
2014	0.22	0.20	0.02	0.05	0.22	0.21	0.01	0.05	0.00
2015	0.19	0.19	0.00	0.05	0.20	0.20	0.00	0.05	0.00
Any SSI Receipt Due (% in year)									
2012	1.98	2.12	-0.14	0.40	2.02	2.15	-0.13	0.35	-0.02†
2013	2.34	2.01	0.32	0.55	2.40	1.97	0.43	0.58	-0.10†
2014	2.16	2.02	0.14	0.49	2.23	2.14	0.10	0.52	0.04
2015	1.87	1.89	-0.02	0.46	1.94	1.96	-0.02	0.46	-0.00

Source: SSA administrative records from the MBR, SSR, and Numident and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2011-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment.. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 = 3,041; T21 = 4,854. Non-deceased 2012: T22 = 3,004; T21 = 4,791. Non-deceased 2013: T22 = 2,957; T21 = 4,713. Non-deceased 2014: T22 = 2,907; T21 = 4,649. Non-deceased 2015: T22 = 2,855; T21 = 4,568.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-13. Stage 2 Comparison of Annual Earnings-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 + T21 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 + T21 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	
Earnings ($ in year)									
2012	$4,148	$3,761	$387*	$198	$4,144	$3,798	$346	$212	$41
2013	$4,543	$4,132	$411*	$217	$4,625	$4,248	$378	$229	$33
2014	$4,872	$4,432	$440	$246	$5,015	$4,610	$405	$254	$35
2015	$5,190	$4,829	$361	$254	$5,456	$5,145	$311	$273	$50
Employment (% in year)									
2012	40.37	38.59	1.77**	0.77	40.53	38.80	1.73*	0.78	0.04
2013	39.66	37.43	2.23**	0.85	40.48	38.34	2.14**	0.86	0.10
2014	38.80	36.57	2.23**	0.88	40.16	38.01	2.16**	0.90	0.07
2015	37.22	35.59	1.64	0.90	39.20	37.74	1.46	0.94	0.17
Earnings above BYA (% in year)									
2012	10.24	8.94	1.30**	0.53	10.21	9.06	1.15*	0.58	0.14†
2013	11.22	9.09	2.13***	0.55	11.42	9.36	2.07***	0.59	0.07
2014	11.83	9.19	2.63***	0.68	12.22	9.55	2.67***	0.71	-0.04†
2015	12.60	9.85	2.75***	0.67	13.29	10.50	2.79***	0.73	-0.04
Earnings above 2x BYA (% in year)									
2012	3.07	2.69	0.38	0.30	3.02	2.73	0.29	0.33	0.08
2013	3.98	3.57	0.41	0.42	4.01	3.68	0.34	0.45	0.08
2014	4.39	3.90	0.49	0.42	4.50	4.06	0.44	0.44	0.05
2015	4.94	4.60	0.35	0.47	5.17	4.92	0.25	0.51	0.09
Earnings above 3x BYA (% in year)									
2012	1.25	1.00	0.25	0.25	1.23	1.01	0.22	0.25	0.03
2013	1.60	1.59	0.01	0.25	1.60	1.64	-0.04	0.25	0.04
2014	1.84	1.93	-0.09	0.27	1.87	2.00	-0.13	0.28	0.04
2015	2.21	2.27	-0.06	0.36	2.28	2.43	-0.14	0.41	0.08

Source: SSA administrative records from the MEF, MBR, and Numident and the Stage 2 Baseline Survey.

Notes: All earnings outcomes are based on a measure of earnings subject to Social Security taxes (see Appendix A for further detail). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 + T21 = 7,895; C2 = 4,849. Non-deceased 2012: T22 + T21 = 7,795; C2 = 4,783. Non-deceased 2013: T22 + T21 = 7,670; C2 = 4,699. Non-deceased 2014: T22 + T21 = 7,556; C2 = 4,612. Non-deceased 2015: T22 + T21 = 7,423; C2 = 4,524.

*/**/*** Impact estimate is significantly different from zero at the .10/.05/.01 levels, respectively, using a two-tailed t-test with 9 degrees of freedom (resulting from a research design involving 10 study sites) and with no multiple comparisons adjustment.

†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.

Exhibit I-14. Stage 2 Comparison of Annual Benefit-Related Impacts for Full Sample to Subgroup of Non-Deceased for Entire Year (T22 + T21 versus C2)

Year of Outcome	Full Sample				Non-deceased for full year				Estimated Difference in Impact (9)
	T22 + T21 Mean (1)	C2 Mean (2)	Impact Estimate (3)	Standard Error (4)	T22 + T21 Mean (5)	C2 Mean (6)	Impact Estimate (7)	Standard Error (8)	
SSDI Benefits Due ($ for year)									
2012	$13,146	$12,911	$235**	$100	$13,223	$12,997	$226**	$99	$9
2013	$12,980	$12,493	$487***	$109	$13,208	$12,755	$453***	$105	$33†
2014	$12,694	$12,180	$514***	$116	$13,145	$12,634	$511***	$109	$3†
2015	$12,683	$12,048	$635***	$125	$13,327	$12,738	$589***	$116	$46
Number of Months with SSDI Payments Due									
2012	11.36	11.12	0.24***	0.05	11.44	11.19	0.25***	0.05	-0.00††
2013	11.26	10.73	0.53***	0.06	11.48	10.96	0.53***	0.07	0.00
2014	11.06	10.44	0.62***	0.07	11.46	10.83	0.63***	0.06	-0.01†††
2015	10.83	10.11	0.72***	0.08	11.39	10.68	0.71***	0.07	0.01††
Any SSDI Receipt Due (% in year)									
2012	96.25	95.55	0.70	0.43	96.57	95.78	0.80*	0.42	-0.09
2013	95.31	92.84	2.47***	0.53	96.54	94.12	2.42***	0.53	0.05
2014	93.68	89.82	3.86***	0.56	96.50	92.50	4.01***	0.47	-0.14††
2015	92.12	87.07	5.05***	0.62	96.14	91.17	4.97***	0.51	0.08†
SSI Benefits Due ($ for year)									
2012	$32	$25	$6	$6	$32	$25	$7	$6	$-0
2013	$36	$33	$3	$7	$37	$34	$3	$8	$-0
2014	$39	$36	$3	$8	$41	$37	$4	$8	$-1
2015	$35	$36	$-1	$8	$37	$38	$-1	$9	$0
Number of Months with SSI Payments Due									
2012	0.18	0.15	0.03	0.03	0.18	0.15	0.03	0.03	-0.00
2013	0.20	0.18	0.02	0.03	0.20	0.18	0.02	0.03	0.00
2014	0.20	0.19	0.01	0.03	0.22	0.20	0.02	0.03	-0.01†
2015	0.19	0.18	0.01	0.03	0.20	0.19	0.01	0.03	0.00
Any SSI Receipt Due (% in year)									
2012	2.07	1.64	0.43	0.27	2.10	1.64	0.46	0.27	-0.03
2013	2.14	2.08	0.06	0.30	2.14	2.12	0.01	0.31	0.05
2014	2.07	2.24	-0.17	0.31	2.18	2.29	-0.11	0.32	-0.06
2015	1.88	1.85	0.03	0.29	1.95	1.96	-0.01	0.31	0.04

Source: SSA administrative records from the MBR, SSR, and Numident and the Stage 2 Baseline Survey.

Notes: Benefit outcomes are based on benefits paid during the 2011-2015 period, corrected for retroactive adjustments made through May 2017 (Appendix A). Weights are used to ensure that the BOND subjects who met analysis criteria are representative of the national population of SSDI-only beneficiaries who would volunteer for study enrollment. Means and impact estimates are regression-adjusted for baseline characteristics. All dollar amounts are inflation-adjusted to 2016 dollars using the Consumer Price Index for Urban Wage Earners and Clerical Workers (CPI-W).

Unweighted sample sizes: Full Sample: T22 + T21 = 7,895; C2 = 4,849. Non-deceased 2012: T22 + T21 = 7,795; C2 = 4,783. Non-deceased 2013: T22 + T21 = 7,670; C2 = 4,699. Non-deceased 2014: T22 + T21 = 7,556; C2 = 4,612. Non-deceased 2015: T22 + T21 = 7,423; C2 = 4,524.

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†/††/††† Difference in impact estimates is significantly different from zero at the .10/.05/.01 levels, respectively, using an F-test.