Increasing Enrollment in Income-Driven Student Loan Repayment Plans: Evidence from the Navient Field Experiment

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Abstract
To reduce student loan delinquency and default, the federal government provides income-driven repayment (IDR) plans in which monthly student loan payments depend on the borrower’s discretionary income. This study reports evidence from a randomized field experiment conducted by a major student loan servicer, Navient, in which treated borrowers received pre-populated IDR applications for electronic signature. As a result, IDR enrollment increased by 34 percentage points relative to the control group. Using the random treatment assignment as an instrument for IDR enrollment, we provide LATE estimates of the effects of IDR enrollment on new delinquencies, monthly student loan payments, and consumer spending. The estimates suggest that less sophisticated borrowers benefit significantly more from IDR enrollment than the population average does. Our study provides the first field-experimental evaluation of a U.S. government program designed to address the soaring debt burdens of U.S. households.

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1 Introduction

Under the 10-year standard repayment plan, student loan borrowers make fixed monthly payments over a 10-year period. To help borrowers avoid delinquency and default, the federal government provides various *income-driven repayment* (IDR) plans under which monthly payments depend on the borrower’s discretionary income—the difference between her annual income and (typically) 150 percent of the Federal Poverty Guideline (FPG). Moreover, the repayment period is extended up to 25 years, at the end of which any outstanding loan balance is forgiven. According to the Government Accountability Office (GAO, 2016), the implied subsidy provided by the federal government for federal student loans in IDR plans in fiscal year 2017 is estimated to be $74 billion. This corresponds to a 21 percent subsidy rate, or an average cost to the government of $21 for every $100 in student loans disbursed. Similarly, according to the Congressional Budget Office (CBO, 2020), the implied subsidy cost of federal student loans issued between 2020 and 2029 in IDR plans is estimated to be $83 billion, corresponding to a 17 percent subsidy rate.¹

Despite outreach efforts by the Education Department and student loan servicers, enrollment in IDR remains incomplete. Estimates by the Treasury Department indicate that only about 20 percent of borrowers who are eligible for IDR are enrolled in the program (GAO, 2015).² Take-up is low even if borrowers are “pre-qualified” (pre-approved conditional on income verification) and hence fully aware of their program eligibility. According to Navient, a major student loan servicer, “only 27% of pre-qualified borrowers were returning their applications. We studied the process and secured customer feedback, and determined that the complexity and effort required to print, sign and return the IDR application was negatively impacting the application return rate” (Navient, 2017, p. 8).³

¹These are budget definitions of subsidy cost based on procedures required by the Federal Credit Reform Act of 1990 (FCRA). Under the FCRA approach, projected cash flows are discounted using interest rates on Treasury securities, which reflect the government’s cost of funding the loans. This arguably differs from how most economists would compute the implied cost of a government subsidy, namely, by using counterfactual market prices. See Lucas and Moore (2010) and Eberly (2010) for a discussion in the context of student loans, and Lucas (2016) for a discussion of the benefits and costs of federal credit programs more generally. The closest counterpart to a market-based estimate is the CBO’s “fair-value estimate,” which accounts for “the higher interest rates that private lenders would charge if they were to offer loans with similar terms” (CBO, 2020, p. 20). Under this estimate, the implied subsidy cost of federal student loans in IDR plans is significantly higher, namely, $212 billion, corresponding to a subsidy rate of 43 percent.

²Estimating how many borrowers are eligible for IDR is difficult, because monthly payments—which are an essential part of the means test to determine whether a borrower is eligible—depend on the borrower’s (discretionary) income. However, only borrowers who actually apply for IDR are required to provide income information to the Education Department. In this one-time analysis, the Treasury Department matched administrative student loan data from the Education Department’s National Student Loan Data System (NSLDS) to IRS tax return data for a random sample of student loan borrowers.

³The 2017 IDR application is included in Online Appendix B.
This view is shared by the White House. In 2012, President Obama expressed frustration over the difficulties in applying for Income-Based Repayment (IBR)—a type of IDR plan introduced by his administration:

“[T]oo many borrowers have had difficulties navigating and completing the IBR application process once they have started it [...] Although the Department of Education has recently removed some of the hurdles to completing the process, too many borrowers are still struggling to access this important repayment option due to difficulty in applying.”

Student loan servicers, such as Navient, review the various IDR plan options with the borrowers, inform them about their eligibility, and pre-qualify them for the program. However, in order to enroll in an IDR plan, borrowers must then go to the Education Department’s centralized application portal and either apply online or print out, sign, and return a completed paper application. In an effort to simplify this process, Navient conducted a randomized field experiment between April and July 2017 in which treated borrowers—after talking to a Navient call center agent on the phone—received pre-populated IDR applications that could be signed and returned electronically. By contrast, borrowers in the control group—after talking to the agent on the phone—had to apply in the (usual) way described above. The pre-filling of applications is a simple intervention that can potentially be applied in many other social programs. It was previously suggested by behavioral economists as a way to encourage program take-up (e.g., Bertrand, Mullainathan, and Shafir, 2004, 2006) as well as by Navient in various communications with federal agencies (e.g., Navient, 2015b).

This article reports findings from the Navient field experiment. The experiment involved over 7,300 borrowers who—by virtue of Navient’s automated Interactive Voice Response (IVR) system—were randomly assigned to call center agents (“repayment plan specialists”). Control and treatment borrowers are well balanced with regard to both (pre-randomization) characteristics and outcome variables. Prior to the field experiment, both groups of borrowers exhibit parallel trends and IDR enrollment rates of about 24 percent. However, during the field experiment, their IDR enrollment rates diverge. While the IDR enrollment rate of control borrowers remains practically unchanged, that of treatment borrowers increases sharply. In August 2017, after the field experiment, their

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5 About 40 percent of IDR applications are submitted fully online, half are submitted using paper only by printing out the application form, and the rest are submitted online but with hardcopy income documentation (Navient, 2015b).
IDR enrollment rate is 60.5 percent, which is 2.5 times their enrollment rate in March and 2.3 times their counterfactual enrollment rate in August.

How significant is this increase in IDR enrollment? In other words, what is the foregone benefit for borrowers who qualify for IDR but do not enroll? To answer this question, we simulate loan repayment paths under IDR and the 10-year standard plan for a range of borrowers with different incomes and monthly payments under the standard plan. We find that borrowers with low incomes and high monthly payments enjoy large instant payment reductions as well as substantial debt forgiveness when enrolling in IDR, while practically all borrowers benefit from payment smoothing. For a typical borrower in our sample—who has been making payments under the standard plan for many years—the present value (PV) benefit from switching to IDR ranges from $3,017 to $13,947. While most borrowers benefit from enrolling in IDR, the question of whether society benefits is more complicated, as generous debt relief programs such as IDR may have “ex-ante effects” by making student loan borrowing more attractive. As we argue in the paper, the answer to this question depends on whether one believes that the current volume of student loan borrowing is excessive, “or not enough” (Avery and Turner, 2012).

In the final part of the paper, we use the random treatment assignment as an instrument for IDR enrollment to estimate the effects of IDR on monthly student loan payments, new delinquencies, and consumer spending (using credit card balances and new auto financing transactions). We find drops in monthly payments of $355, drops in new delinquencies of 7.05 percentage points, and increases in consumer spending that roughly mirror the drops in monthly payments. In some cases, the LATE estimates are several times larger than the corresponding OLS estimates. This difference between the LATE and OLS estimates is potentially informative about marginal borrowers who respond to the treatment. Indeed, compliers in the field experiment are relatively less sophisticated borrowers who are struggling with applications, and who are therefore receptive to application assistance. Accordingly, the difference between the LATE and OLS estimates suggests that less sophisticated borrowers benefit significantly more from IDR enrollment than the population average does—in other words, IDR program benefits and borrower sophistication are negatively related.

Our study is the first field-experimental evaluation of a U.S. government program designed to address the soaring debt burdens of U.S. households. In September 2020, U.S. household debt stood at $14.35 trillion—$1.68 trillion higher than the previous peak in 2008. With $1.55 trillion in outstanding balances, student loan debt is the second largest consumer debt category behind only mortgages ($9.86 trillion) and before auto loan
debt ($1.36 trillion) and credit card debt ($0.81 trillion).\textsuperscript{6} Various other studies provide \textit{quasi-experimental} evidence on the impacts of U.S. government programs designed to help households with their debt burdens. Many of these debt relief programs were introduced in the aftermath of the Great Recession. Perhaps most prominently, the Home Affordable Modification Program (HAMP) provides mortgage lenders and servicers with incentives to modify the mortgage terms of borrowers at risk of default (interest rate and principal reduction, forbearance, term extension). Mortgage payments are capped at a fraction of monthly income—similar to the income dependence of monthly student loan payments in IDR plans. Using a range of different identification strategies, Agarwal et al. (2017) and Ganong and Noel (2020) study the effects of HAMP on mortgage payments, foreclosure, delinquency, default, as well as consumer spending.\textsuperscript{7} Our paper studies the effects of IDR on student loan payments, delinquency, and consumer spending using the random treatment assignment as an instrument for IDR enrollment.

A large literature in behavioral household finance studies psychological frictions in financial decision making. A prominent example is the failure of many U.S. households to (optimally) refinance their mortgages (e.g., Keys, Pope, and Pope, 2016; Agarwal, Rosen, and Yao, 2016). Relatedly, price dispersion in consumer credit markets has frequently been linked to lack of consumer sophistication, albeit it can also arise in rational models with differential search costs (e.g., Agarwal et al., 2020). In the context of student loans, Cadena and Keys (2013) find that many students who are offered interest-free student loans turn them down. While this could be due to a lack of understanding of how the subsidy works, the authors conclude that the evidence is most consistent with models of impulse control. By contrast, our paper focuses on the hassle costs associated with filling out applications. As Bertrand, Mullainathan, and Shafir (2004, 2006) point out, while many economists might view such hassle costs as too minor to be taken seriously, these are exactly the kinds of hassles that dissuade many people from taking up social programs. Agarwal, Chomsisengphet, and Lim (2017) provide a comprehensive review of the behavioral literature studying consumer financial decision making.

Our paper is part of a growing literature in household finance that studies student loans. Looney and Yannelis (2015) highlight the importance of borrower composition and the institutions they attend for student loan defaults, while Mueller and Yannelis (2019) focus on house prices and labor market conditions. Amromin, Eberly, and Mondragon


\textsuperscript{7}The Home Affordable Refinancing Program (HARP) is another debt relief program introduced in the aftermath of the Great Recession. Agarwal et al. (2015) examine the effects of HARP on mortgage payments, foreclosures, and consumer spending.
(2019) study whether households use home equity to finance educational spending and find that a dollar of home equity reduces student loan debt by up to 80 cents. Several recent studies focus on student loan repayment programs, including IDR. Amromin and Eberly (2016) discuss macroeconomic and normative implications of federal student loan repayment programs. Abraham et al. (2020) use a survey experiment to investigate how the framing of IDR affects IDR take-up, and Cox, Kreisman, and Dynarski (2020) use an incentivized laboratory experiment to study the role of information complexity and the default plan option for IDR take-up. Mueller and Yannelis (2019) and Herbst (2019) both examine the association between IDR and borrower outcomes. Mueller and Yannelis, using administrative NSLDS data, study the implications for loan defaults by comparing IBR-eligible and non-IBR eligible borrowers before and after the introduction of the Income-Based Repayment (IBR) program in 2009. Herbst, using data from a student loan servicer, studies the implications for various borrower outcomes, including loan delinquencies and defaults, by comparing borrowers who enroll in IDR with those that do not enroll after receiving a delinquency call from their loan servicer. Both empirical strategies are observational and do not utilize an experiment. Finally, Di Maggio, Kalda, and Yao (2019) study the implications of debt discharge resulting from the dismissal of collection lawsuits filed by National Collegiate, the largest owner of private student debt, against borrowers who had previously defaulted. Different from our setting, the debt relief does not affect short-term liquidity, as the defaulting student loan borrowers had already not been making any payments prior to the lawsuits.

The rest of this paper is organized as follows. Section 2 provides an overview of IDR plans. Section 3 offers background information on Navient, describes the field experiment, provides summary statistics, and discusses external validity. Section 4 lays out the empirical framework and discusses the validity of the experimental design. Section 5 studies whether the treatment—pre-populating IDR applications—accomplished its stated objective of increasing IDR enrollment. Section 6 discusses the benefits (and costs) of IDR for an individual borrower and society as a whole. Section 7 studies the effect of IDR on borrower outcomes—monthly payments, new delinquencies, and consumer spending—using the random treatment assignment as an instrument for IDR enrollment. Section 8 concludes.

8Private student loan borrowers and borrowers in default are not eligible for IDR. About 92.13% of student loans are federally owned or guaranteed; the remainder are private student loans (MeasureOne, March 2020).
2 Income-Driven Repayment Plans

Under the 10-year standard repayment plan, a student loan borrower who has trouble making her monthly payments may be eligible to temporarily reduce or suspend payments through a deferment or a forbearance. If she misses a payment, the loan becomes delinquent. If the loan is delinquent for 271 days, it goes into default. The consequences of student loan delinquency and default can be severe. After 90 days of delinquency, the loan servicer reports the delinquency to all major credit bureaus. A lower credit score may impair the borrower’s access to credit, ability to rent or buy a home, or prospects of finding a job. When a federal student loan defaults, the borrower may be charged collection fees, wages may be garnished, and tax refunds and federal benefit payments may be withheld. Unlike other types of loans, student loans are not dischargable in bankruptcy.

The standard repayment plan is the default plan. To provide student loan borrowers with alternative repayment options, the government has introduced a series of IDR plans under which monthly payments depend on the borrower’s discretionary income—the difference between her annual income and (typically) 150 percent of the FPG, which in turn depends on family size. Under most IDR plans, monthly payments are capped at what they would have been under the standard plan. The repayment period is extended up to 25 years, depending on the plan, at the end of which any outstanding balance is forgiven. To enroll in IDR, the borrower must pass a means test, which stipulates that monthly payments under IDR be less than what they would have been under the standard plan. There are four main types of IDR plans: Income-Contingent Repayment (ICR) plan (introduced in 1994), Income-Based Repayment (IBR) plan (2009), Pay As You Earn (PAYE) plan (2012), and Revised Pay As You Earn (REPAYE) plan (2015). While the four plans differ in their generosity and how monthly payments are calculated, the common objective is to help student loan borrowers avoid delinquency and default by making monthly payments affordable. Indeed, the Education Department advertises on its website that “[d]ependning on your income and family size, you may have no monthly payment at all.” In the first quarter of 2017—immediately prior to the field experiment—27.4 percent of federal student loan borrowers are enrolled in one of the four IDR plans (Federal Student Aid Data Center). And yet, delinquency and default rates remain high, underscoring the need to enroll (even)

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9 According to a survey of 12,500 student loan borrowers enrolled in IDR, 38 percent of borrowers—and 47 percent of new enrollees (first year in IDR)—make zero monthly payments. Nearly half of all borrowers (48 percent) making reduced monthly payments in IDR pay less than 25 percent of what they would have paid under the standard plan, 31 percent pay between 25 and 49 percent, 14 percent pay between 50 and 74 percent, and seven percent make reduced monthly payments within 75 percent of their payments under the standard plan (Navient, 2015a).
more borrowers in IDR.

One reason why not more borrowers are enrolled in IDR could be lack of awareness. In view of this fact, student loan servicers make it a priority to educate borrowers about alternative repayment options, such as IDR. But even if the loan servicer makes direct contact with the borrower, enrollment rates remain low. In a survey of delinquent borrowers that discussed enrolling in IDR with a Navient call center agent—and that were pre-qualified during the call—only about 27 percent took the necessary steps to enroll. The other 73 percent did not complete enrollment despite receiving follow-up calls and written reminders (Navient, 2016).

3 The Navient Field Experiment

3.1 Navient

Navient owns and services a portfolio of federally guaranteed loans originated under the Federal Family Education Loan (FFEL) Program, which ended following the passage of the Health Care and Education Reconciliation Act of 2010. In addition, Navient has a contract to service Direct Loans for the Education Department besides servicing a smaller portfolio of private education loans that are not federally guaranteed. In 2017—the year of the field experiment—Navient serviced over $300 billion in student loans for approximately 12 million Direct Loan, FFEL, and private student loan customers. The field experiment pertained to (federally guaranteed) FFEL loans that were owned and serviced by Navient.

Besides handling billing and payments, the role of student loan servicers is to educate borrowers about alternative repayment plan options such as IDR. In the past, Navient repeatedly called for simplifying the process of enrolling borrowers in IDR. A few months prior to the field experiment, Navient president and CEO Jack Remondi said in an interview:

“In the IDR application process, once we review the program with the borrower and pre-qualify them for the program, we have to send them away from Navient to studentloans.gov where they have to complete a 12-page application. They do it on the government’s website, either online or by printing it and filling it out. There are no edit checks in that process, so if a customer makes a mistake or selects the wrong program, it gets sent to us by the Department of Education. We then have to return it, tell the borrower they’ve made a mistake, fix it. All of those things are very time-consuming and complex. [...] We’ve asked the department to be able to co-browse with borrowers on the website to assist them in completing the
application to make sure they complete it correctly. We’ve asked for the right to do verbal enrollment. We’ve argued extensively for simplification and received zero response or action” (Washington Post, January 23, 2017).

The field experiment focused on the main issue brought up in the interview: while Navient was not allowed to co-browse with borrowers on the Education Department’s website to help them apply online—or enroll them verbally during the call—it could pre-populate the IDR application and email it to borrowers for electronic signature.

3.2 Field Experiment

At Navient, calls are routed through an automated Interactive Voice Response (IVR) system, as is typical for call centers, that interacts with the customer, gathers basic information, and then routes the customer to the appropriate call center agent. Customers are routed to a “repayment plan specialist” if they have questions about alternative repayment options or indicate having trouble making their monthly payments. Repayment plan specialists must follow a set routine when talking to customers. If a customer is delinquent or indicates having trouble making repayments, the repayment plan specialist is instructed to present and model alternative repayment options such as IDR. In fact, Navient provides its repayment plan specialists with “suggested speaks” of how to ask questions about income and family size so as to model IDR even when the customer is requesting a forbearance.

Between April 12 and July 31, 2017, Navient conducted a field experiment in which FFEL borrowers were randomly assigned to two groups of repayment plan specialists. One group (“control agents”) handled applications for IDR in the usual manner. That is, the repayment plan specialist modeled and reviewed repayment options with the borrower and, if she is eligible, pre-qualified her for the program. The borrower then completed the IDR application on her own, either by applying online through the Education Department’s centralized application portal, or by printing, signing, and returning a completed paper application. The other group (“treatment agents”) also modeled and reviewed repayment options with the borrower and, if she is eligible, pre-qualified her for the program. However, after the phone call, the repayment plan specialist emailed the borrower a pre-populated IDR application that could be signed and returned electronically.10

During the field experiment, borrowers were randomly assigned to control and treatment agents. Navient’s automated IVR system places borrowers in a holding queue until their call is answered by the next available agent. Call center agents, in turn, do

10Borrowers who did not certify zero income also received the pre-populated IRS Form 4506-T allowing Navient to obtain income information directly from the IRS.
not know the identity of the caller before answering the call. Accordingly, borrowers do not get to pick which repayment plan specialist they talk to, and vice versa. During the field experiment, 7,319 unique FFEL borrowers were routed to a Navient repayment plan specialist. Of those, 4,163 borrowers were routed to a control agent (“control borrowers”), and 3,156 were routed to a treatment agent (“treatment borrowers”).

3.3 Descriptive Statistics

We have monthly data at the individual borrower level for all 7,319 FFEL borrowers that were part of the field experiment. For each borrower, we know the date of the call and whether she was routed to a control or treatment agent. For borrowers enrolled in IDR, we also have information on their income. All borrowers enrolled in IDR need to (re-)certify their income annually. Lastly, for 7,115 of the 7,319 borrowers in our sample, we have information on monthly credit card balances and the number of individual auto financing lines for August 2016 and August 2017 based on TransUnion data.

Table 1 provides summary statistics. The table reports means and standard deviations for control borrowers. All statistics are from March 2017, except for credit card balances and auto financing lines, which are from August 2016. The typical student loan borrower in our sample is 42 years old. By comparison, the average age of student loan borrowers in repayment in administrative NSLDS data is 37 years (Mueller and Yannelis, 2019). Virtually all borrowers are U.S. citizens, and they come from all four U.S. Census regions: 16.5 percent are from the West, 22.6 percent are from the Midwest, 47.7 percent are from the South, and 13.3 percent are from the Northeast.

The average amount disbursed is $11,078. By comparison, the amount of student debt when entering into repayment for the 2008 repayment year cohort—the median repayment year cohort in our sample—in NSLDS data is $13,504 (Looney and Yannelis, 2015). About 95.1 percent of borrowers in our sample have at least one subsidized loan. About 7.9 percent are in deferment, 9.6 percent are in forbearance, and 23.6 percent are enrolled in IDR. By comparison, 26.2 percent of all of Navient’s Direct Loan or ED-owned FFEL borrowers

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If a borrower had multiple interactions with Navient during the field experiment, treatment status is assigned based on the first call made.

This comparison is not perfect, as the amount of student debt when entering into repayment includes the amount disbursed plus accrued interest until the beginning of repayment, so it is naturally higher. For example, suppose $2,769.5 ($2,769.5 x 4 = $11,078) is disbursed in each of four college years, and the interest rate on student loans is 6 percent annually, then the amount of student debt when entering into repayment, including accrued interest, is $12,842, which is closer to the $13,504 reported in NSLDS data.

Subsidized loans are undergraduate loans requiring an income test to demonstrate financial needs. They do not accrue interest while the borrower is in college at least half-time or during deferment periods.
are enrolled in IDR in the first quarter of 2017. The new delinquency rate—the fraction of borrowers who are 60 or more days delinquent for the first time—is 1.9 percent. Lastly, the typical borrower in our sample makes monthly payments of $256 on her FFEL loans, has a credit card balance of $1,761, and has 1.52 auto financing lines.

Many of our sample borrowers are likely having trouble making repayments. For one, a median repayment cohort of 2008 implies that, in March 2017, many of them have likely gone through multiple forbearances and deferments. (This also explains why our sample borrowers are slightly older.) Second, while we do not have information on income for all our sample borrowers, we do know that borrowers switching over to IDR during the field experiment have a mean income of $27,176, which is low compared to the average personal (not household) income of $48,986 in the U.S. in 2017. Third, many of our sample borrowers are negatively amortizing. In March 2017, the average balance outstanding is $17,494, which is 58 percent above the average disbursement amount of $11,078. Indeed, 30 percent of our sample borrowers exhibited increasing balances between January and March 2017. Finally, and perhaps most important, all our sample borrowers called Navient so as to speak to a repayment plan specialist, suggesting that many, if not most, of them have been struggling to make their monthly payments.

While our results may overstate the benefits of IDR for a randomly selected student loan borrower, they are informative about precisely the group of student loan borrowers that the IDR program is trying to target: borrowers who are having trouble making repayments because their income is low and/or their monthly payments are high. In fact, borrowers with sufficiently high incomes and/or low monthly standard payments are not eligible for IDR, as the means test requires that monthly payments under IDR must be less than under the standard plan. Note that most field experiments pertaining to social programs do not use random population samples but rather targeted samples based on their likely program eligibility. For instance, Finkelstein et al. (2012) focus on uninsured low-income adults who signed up on a waiting list for a spot in the Medicaid program, Bhargava and Manoli (2015) focus on tax filers who failed to claim their Earned Income Tax Credit (EITC) despite presumed eligibility and the receipt of a reminder notice, and Finkelstein and Notowidigo (2019) focus on elderly citizens who are on Medicaid and thus are likely also eligible for the Supplemental Nutrition Assistance Program (SNAP).

14In percent of dollars, 41.4 percent of Navient’s Direct Loan and ED-owned FFEL program loans are enrolled in IDR in the first quarter of 2017 (Federal Student Aid Data Center).

15Under the 10-year standard repayment plan, a borrower who enters into repayment in 2007 or before would have paid off her student loan by 2017.
4 Empirical Framework

4.1 Intent-to-Treat Effect

We estimate the intent-to-treat (ITT) effect of assisting student loan borrowers with completing IDR applications. In the field experiment, treated borrowers received pre-populated IDR applications after talking to a Navient repayment plan specialist on the phone. By contrast, control borrowers, after talking to the Navient repayment plan specialist, had to complete the IDR application on their own, either by applying online through the Education Department’s centralized website or by printing, signing, and returning a completed paper application. We estimate the ITT effect of this intervention—that is, the difference in mean outcomes between control and treatment groups—by estimating the following equation using ordinary least squares (OLS):

\[ y_{it} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 X_i + \epsilon_{it}, \]  

(1)

where \( y_{it} \) is an outcome variable for borrower \( i \), Treatment\(_i\) is an indicator variable for whether borrower \( i \) received a pre-populated IDR application, \( X_i \) is a set of pre-randomization covariates, and \( \epsilon_{it} \) is the error term. While the covariates are not strictly necessary for obtaining an unbiased estimate, they can potentially improve power by accounting for chance differences in borrower characteristics between treatment and control groups. The set of covariates includes the full set of pre-randomization borrower characteristics from Table 1: borrower age, citizenship, indicators for the four Census regions (West, Midwest, South, Northeast), principal amount disbursed, and indicators for whether the borrower is in deferment, in forbearance, or has subsidized loans.

4.2 Validity of Experimental Design

Navient’s automated IVR system ensures that the treatment was randomly assigned among borrowers. As explained above, borrowers are placed in a holding queue until their call is answered by the next available agent. Call center agents, in turn, do not know the identity of the caller before answering the call. Thus, borrowers do not get to pick which call center agent they talk to, and vice versa.

Table 2 examines the balance between treatment and control group based on pre-randomization variables. Panel a) considers the full set of characteristics included in the set of covariates, \( X_i \): age, citizenship, Census region, principal amount disbursed, and indicators for whether the borrower is in deferment, in forbearance, or has subsidized loans.
loans. Panel b) considers all our main outcome variables: indicators for whether the borrower is enrolled in IDR and is newly delinquent, respectively, monthly student loan payments, monthly credit card balances, and number of individual auto financing lines. All pre-randomization variables are measured in March 2017, except for credit card balances and auto financing lines, which are measured in August 2016. In each case, we estimate equation (1) without controls using as the dependent variable the respective pre-randomization variable. We report both the regression constant, $\beta_0$, and the main coefficient of interest, $\beta_1$. Under the null of treatment-control balance, $\beta_1$ should be statistically insignificant, whereas $\beta_0$ should be equal to the control mean in Table 1. As can be seen, the coefficient $\beta_1$ is marginally significant (at the 10 percent level) in only one out of fifteen regressions, which is consistent with what one would expect by chance if the assignment is random. In all other cases, $\beta_1$ is insignificant.

### 4.3 Local Average Treatment Effect

While equation (1) provides an estimate of the total effect of assisting student loan borrowers with completing IDR applications, we are also interested in the effects of IDR enrollment on borrower outcomes. To this end, we model the relationship between borrower outcomes and IDR enrollment as follows:

$$ y_{it} = \gamma_0 + \gamma_1 \text{IDR}_{it} + \gamma_2 X_i + \xi_{it}, $$

where $y_{it}$ is an outcome variable for borrower $i$, IDR$_{it}$ represents whether borrower $i$ is enrolled in IDR, $X_i$ is a set of pre-randomization covariates, and $\xi_{it}$ is the error term. Our main outcome variables are monthly payments, new delinquencies, credit card balances, and number of individual auto financing lines. The set $X_i$ of covariates is the same as in equation (1).

We estimate equation (2) by two-stage least squares. The first-stage equation is given by equation (1) with IDR$_{it}$ as the dependent variable. For Treatment, to be a valid instrument, the exclusion restriction requires that assisting student loan borrowers with completing IDR applications affects borrower outcomes in equation (2) only through its effect on IDR enrollment. In other words, receiving pre-populated IDR applications has no direct effect on monthly payments, new delinquencies, or consumer spending, other than through its effect on IDR enrollment. Given this identifying assumption, we interpret the coefficient on IDR enrollment from instrumental variable estimation of equation (2) as a local average treatment effect (LATE). It provides an estimate of the effect of IDR enrollment on
the set of compliers who enrolled because of the intervention, and who would have not enrolled otherwise (Imbens and Angrist, 1994).

5 IDR Take-Up

In this section, we study whether the intervention—pre-populating IDR applications that could be signed and returned electronically—accomplished its stated objective of increasing IDR enrollment. In Section 7, we then study the effects of IDR enrollment on borrower outcomes using the random treatment assignment as an instrument for IDR enrollment.

5.1 IDR Enrollment Rates

Figure 1 shows the cumulative percentage of control and treatment borrowers who are enrolled in IDR in a given month. As can be seen, both groups exhibit parallel trends prior to the field experiment—in fact, their IDR enrollment rates are statistically indistinguishable from each another. Enrollment rates in January, February, and March are about 24 percent, consistent with our pre-randomization estimates in Panel b) of Table 2. During the field experiment, the enrollment rate of control borrowers remains virtually unchanged. In August, after the field experiment, it stands at 26.6 percent. By contrast, the enrollment rate of treatment borrowers increases gradually. (The gradual increase reflects the fact that calls are spread out between April and July.) In August, 60.5 percent of treatment borrowers are enrolled in IDR—about 2.5 times their original enrollment rate in March and about 2.3 times their counterfactual enrollment rate in August.

Table 3 confirms this visual impression. We estimate equation (1) both with and without controls using IDR enrollment in August as the dependent variable. At the individual borrower level, IDR enrollment is an indicator of whether the borrower is enrolled in IDR in a given month. Accordingly, the coefficient $\beta_1$ on the Treatment dummy shows the difference in mean enrollment rates between control and treatment borrowers. In column (1), the regression constant is 0.2663, which corresponds to the August enrollment rate of control borrowers in Figure 1. Importantly, the coefficient on the Treatment dummy is 0.3391 and highly significant. Adding up the two coefficients yields 0.6054, which corresponds to the August enrollment rate of treatment borrowers in Figure 1.
5.2 Alternative Interpretations

In the field experiment, borrowers who were randomly assigned to treatment agents received pre-populated IDR applications. Accordingly, we interpret the results in Figure 1 and Table 3 as showing the causal effect of receiving application assistance on IDR enrollment. A potential concern with this interpretation is that treatment agents may systematically differ from control agents in other ways unrelated to the pre-filling of IDR applications, and these (other) differences may confound our results. Understanding the scope for potential confounds is especially important in view of the fact that the Consumer Financial Protection Bureau filed a lawsuit against Navient in January 2017 asserting it did not do enough to enroll borrowers in IDR.\textsuperscript{16} Navient, on the other hand, maintained for many years that the difficulties of enrolling borrowers in IDR lie in the complexity of the application process (e.g., Navient, 2015a, 2016; Washington Post, August 26, 2016). Already in 2016—about a year before the lawsuit—Navient asked the Education Department to run a field experiment on IDR enrollment, but the request was denied (Washington Post, January 23, 2017). The current field experiment, in spring 2017, was viewed as a “pilot program” to see whether it is possible to increase IDR enrollment.

Systematic differences between control and treatment agents may arise from behavioral responses (e.g., motivation, incentives) or selection. While it is impossible to completely rule out differences in behavior—e.g., treatment agents trying harder to enroll borrowers in IDR—there have been, to our knowledge, no differences in training, instructions, or incentives. Also, Navient’s repayment plan specialists, like many call center agents, must follow a standardized script (including “suggested speaks”) when talking to customers, which limits the scope for behavioral differences. As far as selection goes, the potential worry is that treatment agents may be positively selected in the sense that they have a stronger “innate ability” to enroll borrowers in IDR. To examine this possibility, we match control and treatment agents from the field experiment to a different set of 1,636 FFEL borrowers that spoke with these agents in the three months prior to the field experiment. During this (Placebo) period, calls were also randomly assigned—by virtue of Navient’s automated IVR system—but control and treatment agents did not (yet) differ in their authority to email pre-populated IDR applications. Figure OA1 in Online Appendix A shows the percentage of the 1,636 borrowers enrolled in IDR in either January, February, or March separately for borrowers that spoke with a treatment agent and borrowers that spoke with a control agent. As is shown, control and treatment agents not only exhibit parallel trends, but their IDR enrollment rates during the Placebo period are indistinguishable from

each other.

Navient viewed the field experiment as a success and attributed the increase in IDR enrollment to the intervention—the pre-filling of IDR applications that could be signed and returned electronically (Navient 2018). It consequently began offering the treatment more broadly to all of its FFEL delinquent borrowers it had previously spoken to and pre-qualified for the program. The broad rollout occurred in phases and began on August 28 and was completed on November 30.

5.3 Borrower Heterogeneity

As we show in Section 6.2, borrowers with low incomes and high monthly payments ought to benefit the most from IDR. While it is not possible to identify individual compliers in the data, we can say something about their characteristics relative to the overall sample population. To this end, we follow Angrist and Pischke (2009, p. 171) and estimate our first-stage equation separately for different borrower sub-populations stratified by (pre-randomization) monthly payments. For a given sub-population, the ratio of the sub-population first-stage coefficient to the overall first-stage coefficient indicates the relative likelihood that compliers come from that particular sub-population.

Table 4 presents the results. We divide borrowers into quartiles based on their monthly payments in March 2017. For each quartile, we separately estimate equation (1) using IDR enrollment in August as the dependent variable. As is shown, compliers are less likely to come from the first quartile ($75 or less), while they are fairly evenly distributed across the other quartiles. Unfortunately, we cannot perform the same exercise using borrowers’ income, as only borrowers who are in IDR need to certify their income. That being said, we can see in our data that treatment borrowers who switch over to IDR during the field experiment—which includes the set of compliers—have a mean income of $27,176, which qualifies many, if not most, of them for zero monthly payments under IDR.

17 The number of observations is not exactly identical across bins due to multiple borrowers having the same monthly payment. Precisely, the first group includes 1,809 borrowers (24.7 percent), the second group includes 1,857 borrowers (25.4 percent), the third group includes 1,827 borrowers (25.0 percent), and the fourth group includes 1,826 borrowers (24.9 percent). It makes virtually no difference if we assign borrowers with the same monthly payment to the left or right of a given quartile cutoff.

18 This lines up well with survey data. In a survey of 12,500 student loan borrowers enrolled in IDR, 18 percent of new enrollees (first year in IDR) report an annual household income of less than $15,000, while 57 percent report an annual household income of less than $35,000 (Navient, 2015a).
6 Benefits (and Costs) of IDR Plans

Our results show that removing a seemingly small hassle—personally filling out an IDR application—increases IDR enrollment by 34 percentage points, or 127 percent. But just about how significant is this increase in IDR enrollment? In other words, what is the foregone benefit for borrowers who qualify for IDR but do not enroll? In order to size this foregone benefit—and hence scale the implicit perceived cost of IDR enrollment—we compare simulated loan repayment paths under IDR and the 10-year standard plan for a range of borrowers with different incomes and monthly payments (and therefore loan amounts). We consider two income levels, $30,000 and $40,000, and three monthly payments, $100, $300, and $500. As a reference point, the average monthly payment in our sample is $256 (see Table 1), while the average income of treatment borrowers who switch over to IDR during the field experiment is $27,176 (see Section 5.3). To be conservative, we assume a family size of three and an income growth rate of three percent annually. If the family size is larger or the income growth rate is smaller (or income is lower or monthly payments are higher), the benefits of IDR enrollment are even greater.19

We separate the benefits of IDR enrollment into three categories: instant payment relief (Section 6.1), debt forgiveness (Section 6.2), and student debt payment smoothing (Section 6.4). Throughout we take the perspective of an individual borrower to gauge the implied cognitive costs of filling out and processing IDR applications. At the end of this section, we briefly discuss the role of government as well as broader implications for society.

6.1 Instant Payment Relief

Figure 2 shows that enrolling in IDR typically entails a large instant payment relief. With the exception of Panel d), monthly payments are much lower than under the standard plan for many years. Indeed, in Panels a) to c), monthly payments under IDR are zero for almost 15 years. More generally, Figure 2 shows that there are two possible scenarios: income is

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19 We assume a loan interest rate of six percent and a discount rate of four percent annually—in line with the assumptions made by the CBO (2020, p. 39). Given a family size of three, 150 percent of the FPG amounts to $32,580. Our FPG growth rate is 2.4 percent annually, which is the implicit FPG growth rate in the Education Department’s Loan Simulator (https://studentaid.gov/loan-simulator/). We have converted all annual growth rates into monthly growth rates so as to allow payments to vary at monthly frequency. The IDR plan in our simulations is the original Income-Based Repayment (IBR) plan, which is the relevant IDR plan available to FFEL borrowers in our sample. (The “new” IBR plan, which is only available to new borrowers on or after July 1, 2014, is even more generous.) Under the original IBR plan, any outstanding balance is forgiven after 25 years. Monthly payments are the lesser of 15 percent of discretionary income and what they would have been under the standard plan. Discretionary income is any income in excess of 150 percent of the FPG. Our simulated monthly IDR payments match those from the Education Department’s Loan Simulator.
either below (Panels a) to c)) or above (Panels d) to f)) 150 percent of the FPG. In the former case, monthly payments under IDR are zero; in the latter case, they are positive. In Panels a) to c), monthly payments under IDR eventually become positive, because income growth is higher than FPG growth, which implies that income eventually rises above 150 percent of the FPG. Lastly, Panels d) and e) illustrate an important feature of (most) IDR plans, namely, monthly payments are capped at what they would have been under the standard plan.

Our simulations, like those by the Education Department’s Loan Simulator, assume constant income growth. However, an important scenario for many borrowers is the possibility of a large negative income shock, as in the case of job loss. While monthly payments under IDR drop along with the borrower’s income in such a case (after income recertification), those under the standard plan remain fixed. And even though borrowers under the standard plan have the option to apply for a temporary forbearance or deferment, those are not automatically granted and must be approved by the loan servicer. Therefore, in addition to providing instant payment relief, IDR provides borrowers with valuable insurance against income shocks and thus ultimately against delinquency and default.20

6.2 Debt Forgiveness

Under IDR, any outstanding loan balance is forgiven at the end of the repayment period. Figure 2 illustrates the magnitude of this debt forgiveness. As can be seen, the cumulative payment amount—the sum of all monthly payments—is generally much lower under IDR, and the savings are greatest when the borrower’s income is low and her monthly payments under the standard plan are high (as in Panel c)). That being said, the cumulative payment amount need not always be lower under IDR. In Panel d), it is practically the same as under the standard plan, as the borrower pays off the loan in just a little over ten years. And in Panel e), the cumulative payment amount under IDR is even higher than under the standard plan. While the loan is largely paid off at the end—there is only relatively little debt forgiveness—interest has accrued throughout the entire repayment period. Ultimately, the amount of interest paid under IDR in Panel e) is four times as much as under the standard plan ($36,260 vs. $8,978).

20How valuable is this insurance? Unlike other types of loans, student loans are not dischargeable in bankruptcy, and wages can be garnished for the rest of a borrower’s working life. Wage garnishment in the U.S. is very effective. According to the Education Department, the cash recovery rate on defaulted students loans, after subtracting collection costs, is close to 100 percent, and the NPV recovery rate (which accounts for the timing of collected payments), again net of collection costs, is close to 90 percent (Department of Education, Student Loans Overview, Fiscal Year 2021 Budget Proposal). Hence, while student loan default entails many costs, including impaired credit access, it does not allow borrowers to get rid of their debt burdens. If anything, the value of insuring borrowers against default is thus higher than for other types of consumer loans.
Cumulative payment amounts do not take into account the time value of money. In Table 5, we quantify the value of debt forgiveness under IDR using two PV-based measures: the PV of the difference in monthly payments under the standard plan and IDR, and the PV of the amount charged off under IDR, defined as the outstanding (unpaid) balance at the end of the repayment period. Under IDR, this outstanding balance is forgiven. As is shown, debt forgiveness under IDR can be substantial. For instance, in Panel b), the PV of monthly payments under IDR is $28,624 lower than under the standard plan. In other words, the opportunity cost of (not) enrolling in IDR is $28,624. The PV of the amount charged off, $44,053, is even higher. In fact, it is higher than the original loan balance of $27,022, which is possible as the outstanding balance at the end of the repayment period includes accrued interest. In contrast, in Panel e), the PV of monthly payments is $1,766 higher under IDR. As discussed above, this is due to the fact that the amount of interest paid under IDR is four times as much as under the standard plan.

Naturally, if a borrower switches over to IDR after several years of making payments under the standard plan, the loan balance, and therefore the possible debt forgiveness, is smaller. To illustrate, consider again the income/monthly payment scenario from Panel b). If the borrower switches after five years, the PV (at the time of switching) of the difference in monthly payments is $16,028. If she switches after six, seven, or eight years, the savings are $13,118, $10,065, and $6,865, respectively. Even if the borrower switches after nine years—with only one year left in the standard plan—the PV of the difference in monthly payments is still $3,511.

What does this imply for the typical borrower in our sample? Given an average monthly payment of $256 and income of $27,176 (for treatment borrowers who switch to IDR), the opportunity cost of (not) enrolling in IDR—i.e., the PV of the difference in monthly payments under the standard plan and IDR—is $25,370. However, this number is an upper bound. Since most borrowers in our sample have been making payments for many years, their opportunity cost of (not) enrolling in IDR is lower. For instance, a borrower who has been making payments for five years—still assuming a monthly payment of $256 and income of $27,176—would forgo “only” $13,947, while a borrower who has been making payments for six, seven, eight, or nine years would forgo $11,376, $8,700, $5,915, and $3,017, respectively. While the precise opportunity cost hinges on many factors, including the borrower’s income, her monthly payments under the standard plan, and how many years she has been making payments, the range of numbers shown here suggests that the typical

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21 In Panel b), the loan is negatively amortizing throughout the repayment period, despite positive payments in the last ten years, as any unpaid interest is added to the balance. Negative amortization is typical for loans in IDR plans (CBO, 2020, p. 15).
borrower in our sample would forgo substantial savings by not enrolling in IDR.

6.3 Comparison with Other Studies

Seemingly small hassle costs can have disproportionate effects on program take-up, especially when the program benefits are unclear or uncertain. In our context, borrowers may not fully understand, or trust, the amount of savings under IDR. While student loan servicers inform borrowers about monthly savings under IDR, the overall PV benefits depend on many assumptions, including assumptions about the discount rate and future income growth. For example, borrowers who overestimate their income growth will naturally underestimate the benefits of IDR. As shown below, our evidence suggests that the least sophisticated borrowers are the ones who reap the greatest benefits from IDR. Those borrowers may have the least clarity on the benefits of IDR, and hence more likely to be deterred by hassle costs (and even find the hassle more daunting).

With respect to application hassle, many studies find that the hassle of dealing with applications may prevent individuals from enrolling in social programs, often with significant negative consequences. For example, in a field experiment in collaboration with the IRS, Bhargava and Manoli (2015) find that a simple “hassle intervention”—using a denser textual layout or including a few extra questions in the claims worksheet—reduces the take-up of EITC benefits by 17 to 27 percent. A typical non-claimant is estimated to forgo $1,096 in EITC benefits, or about 12 percent of adjusted gross income. Note that, unlike our PV estimates above, this opportunity cost pertains to a single year. Finkelstein and Notowidigo (2019) estimate the implied hassle costs of applying for SNAP (aka “food stamps”). Unlike ours, their field experiment studies application assistance in conjunction with an informational intervention (“Information Plus Assistance”). The intervention tripled SNAP enrollment. The cost of non-enrollment is estimated to be $1,500 or about 15 percent of household income. Again, this opportunity cost pertains to a single year. Finally, Bettinger et al. (2012) conduct a field experiment in which H&R Block tax professionals assisted individuals with completing the Free Application for Federal Student Aid (FAFSA). The intervention increased FAFSA filing rates by 40 to 165 percent, while college enrollment rates increased by 16 to 24 percent. Given an estimated NPV of a college education well

\[22\] As Bertrand, Mullainathan, and Shafir (2006, p. 16) note, “[w]hereas hassle costs may appear to a classical economist as too minor to be taken seriously, such hassles are likely to be especially detrimental in the context of program take-up.” Currie (2006) provides a review of the early literature on program take-up. Accordingly, explanations for the insufficient take-up of social programs are lack of information about eligibility, the stigma associated with program participation, and the hassle costs associated with enrollment. Bhargava and Manoli (2015, Section IV.A) provide a discussion of the hassle costs associated with program take-up.

\[20\]
above $100,000 (Barrow and Malamud, 2015), this implies an opportunity cost of dealing with applications that lies well above ours.

### 6.4 Payment Smoothing

Monthly payments under IDR vary with the borrower’s income and are spread out over a long horizon of up to 25 years, depending on the plan. In contrast, monthly payments under the standard plan are fixed for ten years and zero thereafter. Hence, we would expect monthly payments to be smoother under IDR.\(^23\) Figure 3 plots the fraction of monthly income spent on making student loan payments under the standard plan and IDR for the six income/monthly payment scenarios in Figure 2. (The fraction is decreasing under the standard plan as income growth is positive while monthly payments are fixed.) As can be seen, monthly payments as a fraction of income are generally much smoother under IDR. A notable exception is Panel d), where monthly payments are practically the same under both plans. In fact, even in Panel e)—where the PV of monthly payments is higher under IDR (see Section 6.2)—monthly payments are significantly smoother under IDR. Hence, a third benefit of IDR, besides instant payment relief and debt forgiveness, is the smoothing of student debt payments.

### 6.5 Broader Implications

Many borrowers are likely to benefit from enrolling in IDR. A notable exception are borrowers with high incomes and low monthly payments (and hence low balances), who may end up paying more in interest, and therefore more in total, while not receiving much debt forgiveness (as in Panel e) of Figure 2). However, these are not the typical borrowers that we see enrolling in IDR in our sample.\(^24\) Borrowers, and society at large, also ought to benefit from the reduction in delinquencies and defaults, and the (partial) insurance against labor income risk more generally. As previous studies have shown, “bad credit” and defaults may have significant adverse effects on future credit access, home ownership, family formation, and employment opportunities, among other things. On the other hand, tying student loan payments to income may potentially distort borrowers’ choices during college as well as in the labor market.

\(^{23}\)This argument only pertains to student debt payments. Whether overall debt payments are smoother depends on the nature of the other (e.g., mortgage, auto, credit card) debt payments.

\(^{24}\)See Section 5.3. These are also not the typical borrowers that enroll in IDR in administrative student loan data. Using data from the NSLDS, Karamcheva, Perry, and Yannelis (2020, p. 2) conclude that “Income-driven plans are adversely selected: Borrowers who are most likely to enroll are those with large balances and low post-graduation earnings.”
Testimony to the significant aggregate benefits of IDR for borrowers are the massive implied subsidy costs to the government, as discussed in the Introduction, albeit we (again) caution that these are budget notions of government subsidies—to measure their fiscal impacts—that may differ from how most economists would compute the cost of a government subsidy.

As possible concern is that generous debt relief programs—such as IDR with its flexible repayment options and substantial debt forgiveness—may have “ex-ante effects” by making student loan borrowing more attractive. Whether or not this is desirable is a matter of opinion. While some observers, including media outlets and some politicians, frequently refer to the $1.6 trillion in outstanding student loan debt as a “student debt crisis,” others caution that the economic rationale for the government provision of student loans is a market failure, namely, borrowers cannot pledge their future labor as collateral, which makes student loans fundamentally different from a car loan, a mortgage, or a business loan (e.g., Friedman, 1962; Avery and Turner, 2012; Dynarski, 2014). Indeed, 92 percent of student loan debt in the United States is either issued or guaranteed by the federal government. Hence, and different from other consumer credit markets, a unique feature of the student loan market is that the government is the primary (de facto monopolistic) lender, who not only provides generous subsidies through its student loan repayment program but also—and perhaps especially—through its underlying student loan origination program. Whether or not this government intervention is desirable from a societal perspective depends on whether one believes that student loan borrowing is excessive, or perhaps not enough (see Avery and Turner, 2012).


26As Dynarski (2014, p. 2) notes, “there is no debt crisis: student debt levels are not large relative to the estimated payoff to a college education in the US. Rather, there is a repayment crisis, with student loans paid when borrower’s earnings are lowest and most variable.”

27While eight percent of student loan debt is private, those loans are different from federal student loans. As Dynarski (2016) points out, “there is a large, competitive, private market in a product misleadingly labeled “student loans.” These private “student loans” don’t meet the standard definition of a student loan, because they typically require a creditworthy borrower or cosigner. This rules out most students: it’s pretty unusual for a recent high school graduate to have a credit record that qualifies her as sole signatory on a private loan. These private “student loans” are unsecured consumer credit with a soothing name [...].”

28Federal student loans do not take into account the borrower’s credit risk. As a result, their interest rate is generally lower than that of private student loans. However, federal student loans have borrowing limits—currently between $5,500 and $12,500 per year for undergraduate students. Private student loans are commonly used as a supplement when federal student loans do not cover a student’s financial needs.
7 Borrower Outcomes

Using the random treatment assignment as an instrument for IDR enrollment, we finally study the effects of IDR on borrower outcomes: monthly payments, new delinquencies, and consumer spending (using credit card balances and new auto financing transactions). In each case, we present ITT effects from estimating equation (1), OLS estimates, and LATEs from instrumental variable estimation of equation (2). All borrower outcomes are measured in August 2017, one month after the field experiment. Prior to the field experiment, all outcomes are similar for control and treatment borrowers (see Section 4.2).

7.1 Monthly Payments

In our simulations in Figure 2, IDR enrollment (almost always) leads to a large reduction in monthly payments—at least in the short run. Hence, the question is not so much whether monthly payments decline, but rather by how much, and whether the magnitudes can possibly tell us something about the marginal borrowers (“compliers”) who respond to the treatment.

Figure 4 shows monthly payments for control and treatment borrowers in a given month. In the months before the field experiment, monthly payments are trending slightly upward. Importantly, control and treatment borrowers exhibit parallel trends—in fact, their monthly payments are statistically indistinguishable from each another. Monthly payments of control borrowers continue on this upward trend during the field experiment, closing at $273 in August. By contrast, monthly payments of treatment borrowers drop sharply during the field experiment, closing at $152 in August, a decline of 40 percent relative to their March value and 44 percent relative to their counterfactual August value of $273.

Table 6 confirms this visual impression. Columns (1) and (2) show ITT effects from estimating equation (1) using monthly payments in August 2017 as the dependent variable, with and without controls. In column (1), all estimates line up with the sample means from Figure 4: the regression constant is 272.70, which corresponds to the control mean in August, and the coefficient on the Treatment dummy is −120.52, which corresponds to the difference in means between control and treatment groups. Hence, the ITT effect of assisting borrowers with IDR applications is associated with a drop in monthly payments of $120. Columns (3) to (6) examine the effect of IDR enrollment on monthly payments.

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29Figure OA2 in Online Appendix A shows kernel density estimates of monthly payments in March and August separately for control and treatment borrowers. In March, the two distributions line up perfectly. By contrast, in August, the distribution associated with treatment borrowers exhibits a massive shift toward low and zero monthly payments.
in August. Columns (3) and (4) present OLS estimates, while columns (5) and (6) present LATE estimates from instrumental variable estimation of equation (2). As is shown, the LATE estimate in column (5) implies a reduction in monthly payments of $355, which is four times larger than the corresponding OLS estimate in column (3). This difference between the LATE and OLS estimates is potentially informative about marginal borrowers who respond the treatment. In the field experiment, compliers are less sophisticated borrowers who are struggling with applications, and who are therefore receptive to application assistance. Thus, the difference between the LATE and OLS estimates suggests that less sophisticated borrowers benefit significantly more from IDR enrollment than the population average does—that is, borrower sophistication and program benefits are negatively correlated. For example, less sophisticated borrowers may have lower incomes, which would imply a larger drop in monthly payments upon enrolling in IDR.

Finally, we caution that the drop in monthly payments of $355 is unlikely to be permanent. As Figure 2 illustrates, monthly payments under IDR may remain low, or even zero, for a very long time, but they (almost) always increase at some point.

### 7.2 New Delinquencies

Given the large drop in monthly payments, we would expect new delinquencies to drop as well. Thus, like above, the question is not so much whether new delinquencies go down, but rather by how much, and whether the magnitudes can possibly tell us something about the compliers who respond to the treatment.

Figure 5 shows new delinquency rates—the fraction of borrowers who are 60 or more days past due for the first time—for control and treatment borrowers in a given month. While the pattern is similar to the one for monthly payments, new delinquency rates are much noisier. In any given month, only a few percent of borrowers are delinquent for the first time. Hence, relatively small changes in the number of newly delinquent borrowers can induce large swings in new delinquency rates. As can be seen, control and treatment borrowers are on similar trends prior to the field experiment. During the field experiment, however, new delinquency rates diverge. Specifically, while the new delinquency rate of control borrowers trends upward—consistent with the upward trend in monthly payments in Figure 4—the new delinquency rate of treatment borrowers declines. After the field experiment, in August, the new delinquency rate of treatment borrowers is 0.4 percent, whereas the new delinquency rate of control borrowers is 2.8 percent—the difference between the two is highly significant.

Table 7 confirms this visual impression. The dependent variable is an indicator of
whether the borrower is newly delinquent in August 2017. The ITT estimates in column (1) again line up perfectly with the sample means from Figure 5: the regression constant is 0.0283, which corresponds to the control mean in August, and the coefficient on the Treatment dummy is $-0.0239$, which corresponds to the difference in means between control and treatment groups.\footnote{Figure OA3 and Table OA1 in Online Appendix A show that the result is not driven by borrowers with zero monthly payments. While the magnitude is smaller when we exclude these borrowers—the treatment coefficient drops from $-0.0239$ to $-0.0195$—the effect remains large and highly significant.} The LATE estimate in column (5) implies a drop in new delinquencies of 7.05 percentage points, which is more than four times larger than the corresponding OLS estimate. As discussed above, this suggests that less sophisticated borrowers benefit relatively more from IDR enrollment than the population average.

### 7.3 Consumer Spending

Our estimates in Table 6 show that borrowers enrolling in IDR experience large reductions in monthly payments of $355. In the final part of our analysis, we examine what they do with the freed-up liquidity. We consider monthly credit card balances and—as a measure of durable consumer spending—new auto financing transactions.

Table 8 considers monthly credit card balances in August 2017. As column (5) shows, the LATE estimate implies that IDR enrollment is associated with an increase in monthly credit card balances of $343.\footnote{The first-stage regression for the sample of 7,115 borrowers with available credit bureau data is virtually identical to the one in Table 3; the coefficient on the treatment dummy is 0.3386 with standard error 0.0112, and the regression constant is 0.2659 with standard error 0.0070.} While this suggests consumer spending goes up—credit card balances increase \textit{because} money is spent on goods and services—changes in credit card balances are an imperfect measure of consumer spending. For this reason, many studies use auto purchases as an alternative measure of (durable) consumer spending (e.g., Mian, Rao, and Sufi, 2013; Agarwal et al., 2017).\footnote{Di Maggio, Kermani, and Ramcharan (2015, Table 14) study auto purchases and credit card balances side by side and find that they respond similarly to monetary policy shocks.} Although data on auto purchases are not available at the individual level—only at the ZIP-code level—one can proxy for auto purchases using new auto financing lines from credit bureau data (e.g., Agarwal et al., 2015; Di Maggio et al., 2017; Ganong and Noel, 2020). (Up to 90 percent of auto purchases in the U.S. are financed with debt.) Table 9 considers new auto financing lines in August 2017. As column (5) shows, the LATE estimate implies that IDR enrollment is associated with 0.24 new auto financing transactions. To put this number into perspective, the median (25th percentile) monthly auto loan payment in 2017 based on TransUnion data is $378 ($288), which implies an increase of $262 ($198).
in monthly auto consumption of $0.24 \times 378 = $91 \ (0.24 \times 288 = $69).^{33}

The large increase in consumer spending—which is similar in magnitude to the drop in monthly payments—suggests that our sample borrowers are liquidity constrained. As mentioned before, their income is relatively low ($27,176 for treatment borrowers who switch to IDR), and many of them have likely been struggling to make repayments (see Section 3.3).^{34} That being said, an alternative explanation for the large consumption response is wealth effects. As discussed in Section 6.2, enrolling in IDR may entail a significantly lower PV of payments, the anticipation of which may induce borrowers to increase consumption when they enroll. Although we cannot rule out such wealth effects in general, we believe they are small at best. While the literature has documented large increases in consumer spending in response to liquidity shocks (e.g., Johnson, Parker, and Souleles, 2006; Parker et al., 2013; Agarwal and Qian, 2014; Baker, 2018)—in fact, spending may increase by more than the liquidity shock itself^{35}—MPCs out of wealth have consistently been found to be small, typically between three and eight cents on the dollar (e.g., Zhou and Carroll, 2012; Christelis, Georgarakos, and Jappelli, 2015; Paiella and Pistaferri, 2017; Aladangady, 2017). To illustrate, consider a typical sample borrower who has been making payments for five or more years. Suppose this borrower computes the PV of savings under IDR as we do in Section 6.2 and then spends the savings as a monthly consumption annuity over the following 30 years. The resulting increase in consumer spending is small. It ranges from $14 to $66 per month, which is only a fraction of the freed-up liquidity or, likewise, the increase in spending in Tables 8 and 9.^{36}

7.4 Comparison with Other Studies

It is useful to relate our findings to those in other studies on debt relief. Dobbie and Song (2020), using a randomized field experiment, find positive effects of long-term debt relief but not of short-term liquidity provision. While interest write-downs of $4,302 in three

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33The field experiment runs from April to July 2017. We observe credit card balances and new auto financing lines before and after the field experiment, but not in between, in contrast to IDR enrollment, monthly payments, or new delinquencies. Thus, it is possible that changes in credit card balances or new auto financing lines occur before the date of the treatment. However, for these (pre-treatment) changes to explain our results, they would need to be spuriously correlated with the treatment dummy, which is a random variable.

34The result in Table 4 showing that IDR enrollment is higher among borrowers with large monthly payments further suggests that borrowers are liquidity constrained.

35Parker et al. (2013) find that low-income households spent 128 percent of their tax rebate from the Economic Stimulus Act of 2008 on consumption, consistent with the purchase of large durable goods.

36We assume monthly compounding of interest equivalent to 4% annually (the same discount rate as in Section 6.2). For example, using a PV of $13,947, which corresponds to a typical borrower in our sample who has been making payments for five years, the monthly annuity payment is $66.01.
to five years decrease the probability of filing for consumer bankruptcy by 3.1 percentage points, minimum payment reductions targeting short-run liquidity constraints increase the probability of filing for bankruptcy by 2.3 percentage points. In contrast, Ganong and Noel (2020), using quasi-experimental variation from HAMP, find that mortgage principal reductions that increase wealth without affecting liquidity have no impact on default or consumption, whereas maturity extensions that lower short-term mortgage payments without affecting long-term wealth have a positive impact: a one percent drop in monthly mortgage payments reduces mortgage default rates by 1.2 percent. The authors conclude that “liquidity, and not wealth, drives consumption and default decisions” (p. 3103), which is consistent with our discussion in Section 7.3. Similarly, Di Maggio et al. (2017), exploiting variation in the timing of ARM resets, find that a one percent reduction in monthly mortgage payments reduces the likelihood of becoming delinquent by about two percent, while between 8.1 and 12.3 percent of the additional monthly liquidity is used for new car spending. By comparison, we find that a one percent reduction in monthly student loan payments reduces the likelihood of becoming newly delinquent by 1.9 percent, while between 12.9 and 16.9 percent of the freed-up monthly liquidity is used for new car spending.37

8 Conclusion

Despite massive federal subsidies and outreach efforts by student loan servicers and the Education Department, take-up of IDR remains incomplete. Take-up is low even if borrowers are pre-qualified and hence aware of their program eligibility. Indeed, survey evidence suggests that borrowers are overwhelmed by the complexity and effort required to fill out, sign, and return the IDR application. Between April and July 2017, Navient, a major student loan servicer, conducted a field experiment in which treated borrowers, after talking to a Navient repayment plan specialist on the phone, received pre-populated IDR applications that could be signed and returned electronically. By contrast, control borrowers, after talking to the Navient repayment specialist, had to go to the Education Department’s centralized application portal and either apply online or print out, sign, and

37Monthly student loan payments in the treatment group drop by 44.2 percent relative to the control mean ($120.52/$272.70 = 0.442, see Table 6), while the new delinquency likelihood drops by 84.5 percent (0.0239/0.0283 = 0.845, see Table 7), yielding an elasticity of 0.845/0.442 = 1.91. Likewise, new car spending increases by (0.0823/1.53) × $288 = $15.49 to (0.0823/1.53) × $378 = $20.33 relative to the control mean (see Table 9 and Section 7.3), which implies that between $15.49/$120.52 = 0.129, or 12.9 percent, and $20.33/$120.52 = 0.169, or 16.9 percent, of the additional monthly liquidity is used for new car spending.
The evidence presented in this paper shows that a simple reduction in hassle cost such as the pre-filling of an application can be highly effective: IDR enrollment among treated borrowers increased by 34 percentage points relative to their counterfactual. Further evidence suggests that compliers—borrowers who enrolled in IDR because of the intervention—were borrowers with high monthly payments and low incomes. Indeed, such borrowers not only enjoy the largest payment drops upon enrolling in IDR but also the largest debt forgiveness at the end of the extended repayment period.

Finally, using the random treatment assignment as an instrument for IDR enrollment, we study the effects of IDR on monthly student loan payments, new delinquencies, and consumer spending. Our LATE estimates are several times larger than the corresponding OLS estimates, suggesting that less sophisticated borrowers—who are struggling with applications and are therefore receptive to application assistance—benefit relatively more from enrolling in IDR than the population average does. In other words, program benefits and borrower sophistication are negatively related. Precisely, our LATE estimates show that monthly payments drop by $355, new delinquencies drop by 7.05 percentage points, and consumer spending increases by an amount similar to the drop in monthly payments. The large magnitude of the consumption response suggests that our sample borrowers are likely facing liquidity constraints.

9 References


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38Both groups of borrowers received help over the phone so as to pre-qualify for the program as well as an estimate of new lower monthly payments under the IDR plan


Amromin, Gene, Janice Eberly, and John Mondragon, 2019, Passing the Buck: Liquidity, Student Loans, and Who Pays for College, mimeo, Northwestern University.


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Navient, 2015a, Income-Driven Repayment and Student Loan Affordability: Findings from a Survey of Navient Customers.

Navient, 2015b, Response to the Consumer Financial Protection Bureau Request for Information Regarding Student Loan Servicing.

Navient, 2016, Response to the Consumer Financial Protection Bureau Request for Information Regarding Student Loan Borrower Communications and the “Payback Playbook.”


Figure 1
IDR Take-Up

This figure shows monthly cumulative enrollment rates in IDR plans for control and treatment borrowers. Control and treatment borrowers are described in Section 3.2. Dashed lines represent 95% confidence intervals.
This figure shows monthly and cumulative payments under IDR for different levels of borrower income and monthly payments under the 10-year standard plan. The IDR plan is the (original) Income-Based Repayment (IBR) plan. Under this plan, monthly payments are the lesser of 15 percent of discretionary income and what they would have been under the standard plan. Additional details of the simulations are provided in Section 6.
This figure shows the fraction of monthly income spent on making student loan payments under IDR and the standard plan for the six income/monthly payments scenarios in Figure 2.
Figure 4
Monthly Payments

This figure shows average monthly payments for control and treatment borrowers in any given month. Control and treatment borrowers are described in Section 3.2. Dashed lines represent 95% confidence intervals.
Figure 5
New Delinquencies

This figure shows monthly new delinquency rates for control and treatment borrowers in any given month. Control and treatment borrowers are described in Section 3.2. Dashed lines represent 95% confidence intervals.
Table 1
Descriptive Statistics

This table reports means and standard deviations for control borrowers. Control borrowers are described in Section 3.2. West, Midwest, South, and Northeast are indicators of the Census region in which the borrower lives. Principal is the original principal amount disbursed on the borrower’s FFEL loans. Subsidized is an indicator of whether the borrower has at least one subsidized FFEL loan. Deferment and forbearance are indicators of whether the borrower is in deferment and forbearance, respectively. IDR is an indicator of whether the borrower is enrolled in an IDR plan. Monthly payment is the monthly payment made by the borrower on her FFEL loans. New Delinquency is an indicator of whether the borrower is 60 or more days delinquent for the first time. Credit card balance is the total balance on all of the borrower’s credit cards. Auto financing lines is the number of individual auto financing lines by the borrower. All descriptive statistics are from March 2017 based on 4,163 control borrowers, except for credit card balances and auto loans, which are from August 2016 based on 4,064 control borrowers.

<table>
<thead>
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<th>Control Mean</th>
<th>Standard Deviation</th>
</tr>
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<tr>
<td>Age</td>
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<td>10</td>
</tr>
<tr>
<td>Citizen</td>
<td>0.9918</td>
<td>0.0900</td>
</tr>
<tr>
<td>West</td>
<td>0.1645</td>
<td>0.3708</td>
</tr>
<tr>
<td>Midwest</td>
<td>0.2263</td>
<td>0.4185</td>
</tr>
<tr>
<td>South</td>
<td>0.4766</td>
<td>0.4995</td>
</tr>
<tr>
<td>Northeast</td>
<td>0.1326</td>
<td>0.3391</td>
</tr>
<tr>
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<td>0.2164</td>
</tr>
<tr>
<td>Deferment</td>
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<td>0.2694</td>
</tr>
<tr>
<td>Forbearance</td>
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<td>0.2947</td>
</tr>
<tr>
<td>IDR</td>
<td>0.2359</td>
<td>0.4246</td>
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<tr>
<td>Monthly Payment</td>
<td>256</td>
<td>323</td>
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<tr>
<td>New Delinquency</td>
<td>0.0190</td>
<td>0.1365</td>
</tr>
<tr>
<td>Credit Card Balance</td>
<td>1,761</td>
<td>4,441</td>
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<tr>
<td>Auto Financing Lines</td>
<td>1.52</td>
<td>1.62</td>
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Table 2
Treatment-Control Balance

This table reports results from estimating equation (1) without controls using one of the variables from Table 1 as the dependent variable. All dependent variables are measured in March 2017, except for credit card balances and auto financing lines, which are measured in August 2016. Treatment is an indicator of whether the borrower is a treatment borrower. Treatment borrowers are described in Section 3.2. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

Panel a): Pre-randomization covariates

<table>
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<tr>
<th></th>
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<th>West</th>
<th>Midwest</th>
<th>South</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>-0.2330</td>
<td>0.0015</td>
<td>-0.0004</td>
<td>-0.0082</td>
<td>0.0008</td>
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<tr>
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<td>(0.2276)</td>
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<td>(0.0087)</td>
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<td>(0.0118)</td>
</tr>
<tr>
<td>Constant</td>
<td>41.94***</td>
<td>0.9918***</td>
<td>0.1645***</td>
<td>0.2263***</td>
<td>0.4766***</td>
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<tr>
<td></td>
<td>(0.1496)</td>
<td>(0.0014)</td>
<td>(0.0057)</td>
<td>(0.0065)</td>
<td>(0.0008)</td>
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</table>

<table>
<thead>
<tr>
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<th>Principal</th>
<th>Subsidized</th>
<th>Deferment</th>
<th>Forbearance</th>
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<tbody>
<tr>
<td>Treatment</td>
<td>0.0078</td>
<td>-648.61*</td>
<td>-0.0056</td>
<td>0.0052</td>
<td>-0.0010</td>
</tr>
<tr>
<td></td>
<td>(0.0081)</td>
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<td>(0.0053)</td>
<td>(0.0065)</td>
<td>(0.0069)</td>
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<tr>
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<td>11077.55***</td>
<td>0.9508***</td>
<td>0.0788***</td>
<td>0.0961***</td>
</tr>
<tr>
<td></td>
<td>(0.0053)</td>
<td>(223.27)</td>
<td>(0.0034)</td>
<td>(0.0042)</td>
<td>(0.0046)</td>
</tr>
</tbody>
</table>

| N          | 7,319     | 7,319     | 7,319      | 7,319      | 7,319       |

Panel b): Pre-randomization outcome variables

<table>
<thead>
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<th>Monthly Payment</th>
<th>New Delinquency</th>
<th>Credit Card Balance</th>
<th>Auto Financing Lines</th>
</tr>
</thead>
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<td>Treatment</td>
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<td>-0.0044</td>
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<td>0.0625</td>
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<td>(7.54)</td>
<td>(0.0030)</td>
<td>(107.48)</td>
<td>(0.0401)</td>
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<td>Constant</td>
<td>0.2359***</td>
<td>256.11***</td>
<td>0.0190***</td>
<td>1760.86***</td>
<td>1.52***</td>
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<tr>
<td></td>
<td>(0.0066)</td>
<td>(5.00)</td>
<td>(0.0021)</td>
<td>(70.74)</td>
<td>(0.0265)</td>
</tr>
</tbody>
</table>

| N          | 7,319     | 7,319     | 7,319      | 7,115      | 7,115      |
This table reports results from estimating equation (1) using IDR enrollment in August 2017 as the dependent variable. Treatment is described in Table 2. Column (1) is without controls. Column (2) includes the full set of pre-randomization covariates from Table 2 as controls. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
<thead>
<tr>
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<tr>
<td>Treatment</td>
<td>0.3391***</td>
<td>0.3407***</td>
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<tr>
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<td>(0.0111)</td>
<td>(0.0111)</td>
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<td>Constant</td>
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<td>0.2230***</td>
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<td>(0.0068)</td>
<td>(0.0767)</td>
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<table>
<thead>
<tr>
<th>Controls</th>
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<tbody>
<tr>
<td>N</td>
<td>7,319</td>
<td>7,319</td>
</tr>
</tbody>
</table>
Table 4  
Characterizing Compliers  

This table presents variants of columns (1) and (2) of Table 3, respectively, in which equation (1) is estimated for sub-populations of borrowers stratified by pre-randomization monthly payments in March 2017. In columns (1) and (2), monthly payments are between $0 and $75; in columns (3) and (4), monthly payments are between $76 and $150; in columns (5) and (6), monthly payments are between $151 and $308; and in columns (7) and (8), monthly payments are above $308. Odd-numbered columns are without controls. Even-numbered columns include the full set of pre-randomization covariates from Table 2 as controls. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
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<tr>
<th></th>
<th>First Quartile</th>
<th></th>
<th>Second Quartile</th>
<th></th>
<th>Third Quartile</th>
<th></th>
<th>Fourth Quartile</th>
<th></th>
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</thead>
<tbody>
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<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
</tr>
<tr>
<td>Treatment</td>
<td>0.1760***</td>
<td>0.2277***</td>
<td>0.3484***</td>
<td>0.3574***</td>
<td>0.3427***</td>
<td>0.3588***</td>
<td>0.3100***</td>
<td>0.3164***</td>
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<tr>
<td></td>
<td>(0.0235)</td>
<td>(0.0225)</td>
<td>(0.0207)</td>
<td>(0.0205)</td>
<td>(0.0209)</td>
<td>(0.0206)</td>
<td>(0.0223)</td>
<td>(0.0219)</td>
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<tr>
<td>Constant</td>
<td>0.4002***</td>
<td>0.4359***</td>
<td>0.1448***</td>
<td>0.0046</td>
<td>0.1661***</td>
<td>0.3217**</td>
<td>0.2451***</td>
<td>0.1363</td>
</tr>
<tr>
<td></td>
<td>(0.0150)</td>
<td>(0.1375)</td>
<td>(0.0109)</td>
<td>(0.1431)</td>
<td>(0.0118)</td>
<td>(0.1314)</td>
<td>(0.0132)</td>
<td>(0.1253)</td>
</tr>
<tr>
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<td>Y</td>
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<td>Y</td>
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<td>Y</td>
<td>N</td>
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</tr>
<tr>
<td>N</td>
<td>1,810</td>
<td>1,810</td>
<td>1,850</td>
<td>1,850</td>
<td>1,838</td>
<td>1,838</td>
<td>1,827</td>
<td>1,827</td>
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</table>
Table 5
IDR Payment Simulations

This table provides statistics for the six income/monthly payments scenarios in Figures 2 and 3. Standard refers to the standard 10-year plan. Total Payments and PV of Payments refer to cumulative payment amount and PV of monthly payments, respectively. PV Difference in Payments is the difference between Standard and IDR PV of Payments. PV Amount Charged Off is the PV of the amount charged off under IDR, defined as the remaining (unpaid) balance, including accrued interest, at the end of the repayment period. IDR First Payment is the first monthly payment under IDR, while IDR Last Payment is the last (non-zero) monthly payment under IDR.

<table>
<thead>
<tr>
<th>Standard Monthly Payment (Disbursement Amount)</th>
<th>100</th>
<th>300</th>
<th>500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Total Payments</td>
<td>12,000</td>
<td>36,000</td>
<td>60,000</td>
</tr>
<tr>
<td>Standard PV of Payments</td>
<td>9,910</td>
<td>29,730</td>
<td>49,550</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>30,000 Income</th>
<th>Panel a)</th>
<th>Panel b)</th>
<th>Panel c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDR Total Payments</td>
<td>2,611</td>
<td>2,611</td>
<td>2,611</td>
</tr>
<tr>
<td>IDR PV of Payments</td>
<td>1,106</td>
<td>1,106</td>
<td>1,106</td>
</tr>
<tr>
<td>PV Difference in Payments</td>
<td>8,804</td>
<td>28,624</td>
<td>48,444</td>
</tr>
<tr>
<td>PV Amount Charged Off</td>
<td>13,880</td>
<td>44,053</td>
<td>74,226</td>
</tr>
<tr>
<td>IDR First Payment</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>IDR Last Payment</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>40,000 Income</th>
<th>Panel d)</th>
<th>Panel e)</th>
<th>Panel f)</th>
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</thead>
<tbody>
<tr>
<td>IDR Total Payments</td>
<td>12,050</td>
<td>54,808</td>
<td>54,830</td>
</tr>
<tr>
<td>IDR PV of Payments</td>
<td>9,923</td>
<td>31,496</td>
<td>31,504</td>
</tr>
<tr>
<td>PV Difference in Payments</td>
<td>-13</td>
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<td>18,046</td>
</tr>
<tr>
<td>PV Amount Charged Off</td>
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<td>34,376</td>
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<tr>
<td>IDR First Payment</td>
<td>93</td>
<td>93</td>
<td>93</td>
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<tr>
<td>IDR Last Payment</td>
<td>100</td>
<td>300</td>
<td>306</td>
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</table>
Table 6
Monthly Payments

This table reports results from estimating equations (1) and (2) using monthly payments in August 2017 as the dependent variable. Treatment is described in Table 2. IDR is an indicator of whether the borrower is enrolled in an IDR plan in August 2017. Columns (1) and (2) present ITT effects from estimating equation (1), columns (3) and (4) present OLS results from estimating equation (2), and columns (5) and (6) presents LATEs from instrumental variable estimation of equation (2) using Treatment as an instrument for IDR enrollment. Odd-numbered columns are without controls. Even-numbered columns include the full set of pre-randomization covariates from Table 2 as controls. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
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<tbody>
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<td>(2)</td>
<td>(3)</td>
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<tr>
<td>N</td>
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<td>7,319</td>
<td>7,319</td>
</tr>
</tbody>
</table>
This table reports results from estimating equations (1) and (2) using new delinquencies in August 2017 as the dependent variable. New delinquency is an indicator of whether the borrower is 60 or more days past due for the first time. Treatment and IDR are described in Tables 2 and 6, respectively. Columns (1) and (2) present ITT effects from estimating equation (1), columns (3) and (4) present OLS results from estimating equation (2), and columns (5) and (6) presents LATEs from instrumental variable estimation of equation (2) using Treatment as an instrument for IDR enrollment. Odd-numbered columns are without controls. Even-numbered columns include the full set of pre-randomization covariates from Table 2 as controls. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
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<tr>
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</thead>
<tbody>
<tr>
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<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
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<td></td>
<td></td>
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<td>-0.0127***</td>
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<td>(0.0023)</td>
</tr>
<tr>
<td>Controls</td>
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<td>N</td>
</tr>
<tr>
<td>N</td>
<td>7,319</td>
<td>7,319</td>
<td>7,319</td>
</tr>
</tbody>
</table>
This table reports results from estimating equations (1) and (2) using credit card balances in August 2017 as the dependent variable. Credit card balance is the total balance on all of the borrower’s credit cards. Treatment and IDR are described in Tables 2 and 6, respectively. Columns (1) and (2) present ITT effects from estimating equation (1), columns (3) and (4) present OLS results from estimating equation (2), and columns (5) and (6) presents LATEs from instrumental variable estimation of equation (2) using Treatment as an instrument for IDR enrollment. Odd-numbered columns are without controls. Even-numbered columns include the full set of pre-randomization covariates from Table 2 as controls. The sample is restricted to 7,115 borrowers with available credit card balances. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
<thead>
<tr>
<th></th>
<th>ITT</th>
<th>OLS</th>
<th>LATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>IDR</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>233.94***</td>
<td>247.91***</td>
<td>343.16*</td>
</tr>
<tr>
<td></td>
<td>(61.86)</td>
<td>(63.25)</td>
<td>(180.91)</td>
</tr>
<tr>
<td>Treatment</td>
<td>116.20*</td>
<td>133.99**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(62.34)</td>
<td>(63.78)</td>
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</tr>
<tr>
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<td>986.78***</td>
<td>1718.07***</td>
</tr>
<tr>
<td></td>
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<tr>
<td>N</td>
<td>7,115</td>
<td>7,115</td>
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</tr>
</tbody>
</table>

Table 8
Credit Card Balances
This table reports results from estimating equations (1) and (2) using auto financing lines in August 2017 as the dependent variable. Auto financing lines is the number of individual auto financing lines associated with the borrower. Treatment and IDR are described in Tables 2 and 6, respectively. Columns (1) and (2) present ITT effects from estimating equation (1), columns (3) and (4) present OLS results from estimating equation (2), and columns (5) and (6) presents LATEs from instrumental variable estimation of equation (2) using Treatment as an instrument for IDR enrollment. Odd-numbered columns are without controls. Even-numbered columns include the full set of pre-randomization covariates from Table 2 as controls. The sample is restricted to 7,115 borrowers with available data on auto financing lines. Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
<thead>
<tr>
<th></th>
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<th>OLS</th>
<th>LATE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
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<tr>
<td>IDR</td>
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<tr>
<td></td>
<td>(0.0400)</td>
<td>(0.0408)</td>
<td>(0.1265)</td>
</tr>
<tr>
<td>Treatment</td>
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<td>0.0879**</td>
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</tr>
<tr>
<td></td>
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<td>(0.0397)</td>
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<tr>
<td>N</td>
<td>7,115</td>
<td>7,115</td>
<td>7,115</td>
</tr>
</tbody>
</table>
Online Appendix A:
Figures and Tables
This figure shows monthly cumulative enrollment rates in IDR plans for a (different) sample of 1,636 FFEL borrowers who spoke with either a control or treatment agent in January, February, or March 2017. Control and treatment agents are described in Section 3.2. Dashed lines represent 95% confidence intervals.
Figure OA2
Distribution of Monthly Payments

This figure shows kernel density estimates of monthly payments in March 2017 (before the field experiment) and August 2017 (after the field experiment) for control and treatment borrowers. Control and treatment borrowers are described in Section 3.2. Dashed lines represent 95% confidence intervals.

Panel a): March 2017

Panel b): August 2017
This figure presents a variant of Figure 5 in which borrowers with zero monthly payments in August 2017 are excluded from the sample. Dashed lines represent 95% confidence intervals.
Table OA1  
New Delinquencies Excluding Zero Payments

This table presents variants of columns (1) and (2) of Table 7 in which borrowers with zero monthly payments in August 2017 are excluded from the sample. Columns (1) and (2) show the original results from Table 7 (“full sample”), while columns (3) and (4) show corresponding results when borrowers with zero monthly payments are excluded (“restricted sample”). Standard errors are Huber-White robust standard errors. *, **, and *** denotes significance at the 10%, 5%, and 1% level, respectively.

<table>
<thead>
<tr>
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<th>Restricted Sample</th>
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<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
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<td>N</td>
<td>7,319</td>
<td>7,319</td>
<td>5,909</td>
<td>5,909</td>
</tr>
</tbody>
</table>


Online Appendix B:
2017 IDR Application
INCOME-DRIVEN REPAYMENT PLAN REQUEST:
For the Revised Pay As You Earn (REPAYE), Pay As You Earn (PAYE), Income-Based (IBR), and Income-Contingent (ICR) repayment plans under the William D. Ford Federal Direct Loan (Direct Loan) and Federal Family Education Loan (FFEL) Programs

WARNING: Any person who knowingly makes a false statement or misrepresentation on this form or on any accompanying document is subject to penalties that may include fines, imprisonment, or both, under the U.S. Criminal Code and 20 U.S.C. 1097.

SECTION 1: BORROWER IDENTIFICATION

Please enter or correct the following information.

☐ Check this box if any of your information has changed.

- SSN: ______ - ______ - ______
- Name: ______________________
- Address: ______________________
- City, State, Zip Code: ______________________
- Telephone - Primary: (______)_______ - ______
- Telephone - Alternate: (______)_______ - ______
- Email (Optional): ______________________

SECTION 2: REPAYMENT PLAN OR RECERTIFICATION REQUEST

READ BEFORE COMPLETING THIS FORM:

- You can apply online at StudentLoans.gov. It is faster and easier to complete this form online.
- Income-driven repayment plans offer many benefits, but may not be right for everyone.
- You can learn more about these plans at StudentAid.gov/IDR and by reading Sections 9 and 10.
- It’s simple to explore all of your repayment options at StudentAid.gov/repayment-estimator.
- You can find out which types of loans you have and who your loan holder or servicer is at nslds.ed.gov.
- If you need help completing this request, contact your loan holder or servicer for free assistance.
- You may have to pay income tax on any loan amount forgiven under an income-driven plan.

1. Select the reason you are submitting this form (Check only one):

☐ I am not in an income-driven repayment plan, but want to enter one - Continue to Item 2.

☐ I am already in an income-driven repayment plan and am submitting documentation for the annual recalculation of my payment - Skip to Item 5.

☐ I am already in an income-driven repayment plan and am submitting documentation early because I want my loan holder to recalculate my payment immediately - Skip to Item 5.

☐ I am already in an income-driven repayment plan, but want to change to a different income-driven repayment plan - Continue to Item 2.

2. Choose a plan and then continue to Item 3.

☐ (Recommended) I want my loan holder to place me on the plan with the lowest monthly payment.

☐ REPAYE ☐ IBR

☐ PAYE ☐ ICR

3. Do you have multiple loan holders or servicers?

☐ Yes - Submit a separate request to each loan holder or servicer. Continue to Item 4.

☐ No - Continue to Item 4.

4. Are you currently in a deferment or forbearance?

☐ No - Continue to Item 5.

☐ Yes, but I want to start making payments under my plan immediately - Continue to Item 5.

☐ Yes, but I do not want to start repaying my loans until the deferment or forbearance ends - Continue to Item 5.

If you have FFEL Program loans, they may only be repaid under IBR. If you request a different plan, your loan holder will consider you for IBR on your FFEL Program loans. You may be able to consolidate your FFEL Program loans into a Direct Consolidation Loan to take advantage of other income-driven plans by visiting StudentLoans.gov.
SECTION 3: FAMILY SIZE INFORMATION

5. How many children, including unborn children, are in your family and receive more than half of their support from you?
   
   ____ . Continue to Item 6.

   A definition of "family size" is available in Section 9. Do not enter a value for you or your spouse. Those values are automatically included, if appropriate.

6. How many people, excluding your spouse and children, live with you, and receive more than half of their support from you?
   
   ____ . Continue to Item 7.

7. What is your marital status?
   
   □ Single - Continue to Item 8.
   □ Married - Skip to Item 11.

SECTION 4A: INCOME INFORMATION FOR SINGLE BORROWERS

8. Did you file a federal income tax return for either of the past two tax years?
   
   □ Yes - Continue to Item 9.
   □ No - Skip to Item 10.

9. Has your income significantly changed since you filed your last federal income tax return? For example, have you lost your job, gotten divorced, or experienced a drop in income?
   
   □ Yes - Continue to Item 10.
   □ No - Provide your most recent federal income tax return or transcript. Skip to Section 6.

SECTION 4B: LOAN AND INCOME INFORMATION FOR MARRIED BORROWERS

11. Does your spouse have federal student loans?
    
    □ Yes - Continue to Item 12.
    □ No - Skip to Item 14.

12. Provide the following information about your spouse and then continue to Item 13:
    a. Spouse's SSN:
       
       ____ - ____ - ________
    b. Spouse's Name
       
       ____________________________
    c. Spouse's Date of Birth

13. If you are placed on the ICR plan, do you want to repay your Direct Loans jointly with your spouse?
    
    □ Yes - Continue to Item 14.
    □ No - Continue to Item 14.

14. When you filed your last federal income tax return, did you file jointly with your spouse?
    
    □ Yes - Continue to Item 15.
    □ No - Skip to Item 20.

15. Did you and your spouse file a federal income tax return for either of the past two tax years?
    
    □ Yes - Continue to Item 16.
    □ No - Skip to Item 18.

16. Has your income significantly changed since you filed your last federal income tax return? For example, have you lost your job or experienced a drop in income?
    
    □ Yes - Skip to Item 18.
    □ No - Continue to Item 17.

17. Has your spouse's income significantly changed since your spouse filed his or her last federal income tax return? For example, has your spouse lost his or her job or experienced a drop in income?
    
    □ Yes - Continue to Item 18.
    □ No - Provide your and your spouse's most recent federal income tax return or transcript. Skip to Section 6.

18. Do you currently have taxable income? Check "No" if you do not have any income or receive only untaxed income.
    
    □ Yes - Provide documentation of your income as instructed in Section 5. Continue to Item 19.
    □ No -  Continue to Item 19.

Remember, any person who makes a knowingly false statement or misrepresentation on this form may be subject to fines, imprisonment, or both.
Borrower Name: ___________________________  Borrower SSN: ________-____-______

SECTION 4B: LOAN AND INCOME INFORMATION FOR MARRIED BORROWERS (CONTINUED)

19. Does your spouse currently have taxable income? Check "No" if your spouse has no taxable income or receives only untaxed income.
   - Yes - Provide documentation of your spouse’s income as instructed in Section 5.
   - No - Skip to Section 6.

20. Did you file a federal income tax return for either of the past two years?
   - Yes - Continue to Item 21.
   - No - Skip to Item 22.

21. Has your income significantly changed since you filed your last federal income tax return? For example, have you lost your job or experienced a drop in income?
   - Yes - Continue to Item 22.
   - No - Provide your most recent federal income tax return or transcript. Skip to Item 23.

22. Do you currently have taxable income? Check "No" if you have no taxable income or receive only untaxed income.
   - Yes - Provide documentation of your income as instructed in Section 5. Continue to Item 23.
   - No - Continue to Item 23.

23. Are you separated from your spouse?
   - Yes - Provide documentation of only your income as instructed in Item 21 or 22 and then skip to Section 6.
   - No - Continue to Item 24.

24. Are you reasonably able to access information about your spouse’s income and able to have your spouse sign this application?
   - Yes - Continue to Item 25.
   - No - Provide documentation of only your income as instructed in Item 21 or 22 and then skip to Section 6.

25. Did your spouse file a federal income tax return for either of the past two tax years?
   - Yes - Continue to Item 26.
   - No - Skip to Item 27.

26. Has your spouse's income significantly changed since your spouse filed his or her last federal income tax return? For example, has your spouse lost a job or experienced a drop in income?
   - Yes - Continue to Item 27.
   - No - Provide your spouse's most recent federal income tax return or transcript. This information will only be used for the REPAYE Plan. Skip to Section 6.

27. Does your spouse currently have taxable income? Check "No" if your spouse has no taxable income or received only untaxed income.
   - Yes - Provide documentation of your spouse's income as instructed in Section 5. This information will only be used for the REPAYE Plan.
   - No - Skip to Section 6.

Remember, any person who makes a knowingly false statement or misrepresentation on this form may be subject to fines, imprisonment, or both.

SECTION 5: INSTRUCTIONS FOR DOCUMENTING CURRENT INCOME

You only need to follow these instructions if, based on your answers in Section 4, you and your spouse (if applicable) are required to provide documentation of your current income instead of a tax return or tax transcript. After gathering the appropriate documentation, continue to Section 6.

- You must provide documentation of all taxable income you and your spouse currently receive.
- **Documentation will usually include** a pay stub or letter from your employer listing your gross pay.
- You must provide at least one piece of documentation for each source of taxable income.
- **Taxable income includes**, for example, income from employment, unemployment income, dividend income, dividend income, interest income, tips, and alimony.
- Do not provide documentation of untaxed income such as Supplemental Security Income, child support, or federal or state public assistance.

- If documentation is not available or you want to explain your income, attach a signed statement explaining each source of income and giving the name and the address of each source of income.
- Write on your documentation how often you receive the income, for example, "twice per month" or "every other week."
- The date on any supporting documentation you provide must be no older than 90 days from the date you sign this form.
- Copies of documentation are acceptable.
SECTION 6: BORROWER REQUESTS, UNDERSTANDINGS, AUTHORIZATION, AND CERTIFICATION

If I am requesting an income-driven repayment plan or seeking to change between income-driven repayment plans, I request:

- That my loan holder place me on the plan I selected in Section 2 to repay my eligible Direct Loan or FFEL Program loans held by the holder to which I submit this form.

- If I do not qualify for the plan or plans I requested, that my loan holder place me on the plan with the lowest monthly payment amount.

- If I selected more than one plan, that my loan holder place me on the plan with the lowest monthly payment amount from the plans that I requested.

- If more than one of the plans that I selected provides the same initial payment amount, or if my loan holder is determining which income-driven plans I qualify for and I qualify for more than one of those plans, my loan holder will use the following order in choosing my plan: REPAYE (if my repayment period is 20 years), PAYE, REPAYE (if my repayment period is 25 years), IBR and then ICR.

If I am currently repaying my Direct Loans under the IBR plan and am requesting to change to another income-driven plan, I must be placed on the Standard Repayment Plan, and cannot change to the plan that I requested until I make a payment under the Standard Repayment Plan or make a payment under a reduced-payment forbearance.

If I check the box below, I request that my loan holder grant me a reduced-payment forbearance for one month so that I can move from the IBR plan to my new income-driven repayment plan.

☐ I want a one-month reduced-payment forbearance in the amount of _________ (must be at least $5).

I understand that:

- If I do not provide my loan holder with this completed form and any other required documentation, I will not be placed on the plan that I requested.

- I may choose a different repayment plan for any student loans that are not eligible for income-driven repayment.

- If I requested a reduced-payment forbearance of less than $5 above, my loan holder will grant my forbearance request in the amount of $5.

- If I am requesting the ICR plan, my initial payment amount will be the amount of interest that accrues each month on my loan until my loan holder receives the income documentation needed to calculate my payment amount. If I cannot afford the initial payment amount, I may request a forbearance by contacting my loan holder.

- If I have FFEL Program loans, my spouse may be required to give my loan holder access to his or her loan information in the National Student Loan Data System (NSLDS). My loan holder will contact me with further instructions.

- My loan holder may grant me a forbearance while processing my application or to cover any period of delinquency that exists when I submit my application.

I authorize the loan holder to which I submit this request (and its agents or contractors) to contact me regarding my request or my loan(s), including repayment of my loan(s), at any number that I provide on this form or any future number that I provide for my cellular telephone or other wireless device using automated telephone dialing equipment or artificial or prerecorded voice or text messages.

I certify that all of the information I have provided on this form and in any accompanying documentation is true, complete, and correct to the best of my knowledge and belief.

Borrower’s Signature ___________________________ Date: __________

Spouse’s Signature ___________________________ Date: __________

If you are married, your spouse is required to sign this form unless you answered "yes" to Item 23 or "no" to Item 24.
SECTION 7: WHERE TO SEND THE COMPLETED AGREEMENT

Return the completed form and any documentation to: (if no address is shown, return to your loan holder or servicer.)

If you need help completing this form, call: (if no telephone number is shown, call your loan holder or servicer.)

SECTION 8: INSTRUCTIONS FOR COMPLETING THE FORM

Type or print using dark ink. Enter dates as month-day-year (mm-dd-yyyy). Use only numbers. Example: March 14, 2015 = 03-14-2015. Include your name and account number on any documentation that you are required to submit with this form. Return the completed form and any required documentation to the address shown in Section 7.

SECTION 9: DEFINITIONS

COMMON DEFINITIONS FOR ALL INCOME-DRIVEN REPAYMENT PLANS:

The William D. Ford Federal Direct Loan (Direct Loan) Program includes Direct Subsidized Loans, Direct Unsubsidized Loans, Direct PLUS Loans, and Direct Consolidation Loans.


The poverty guideline amount is the figure for your state and family size from the poverty guidelines published annually by the U.S. Department of Health and Human Services (HHS). The HHS poverty guidelines are used for purposes such as determining eligibility for certain federal benefit programs. If you are not a resident of a state identified in the poverty guidelines, your poverty guideline amount is the amount used for the 48 contiguous states.

Family size always includes you and your children (including unborn children who will be born during the year for which you certify your family size), if the children will receive more than half their support from you.

For the PAYE, IBR, and ICR Plans, family size also always includes your spouse. For the REPAYE plan, family size includes your spouse unless your spouse’s income is excluded from the calculation of your payment amount because you are (1) separated from your spouse or (2) unable to access your spouse’s income information.

For all plans, family size also includes other people only if they live with you now, receive more than half their support from you now, and will continue to receive this support for the year that you certify your family size. Support includes money, gifts, loans, housing, food, clothes, car, medical and dental care, and payment of college costs.

For the purposes of these repayment plans, your family size may be different from the number of exemptions you claim on your federal income tax return.

Capitalization is the addition of unpaid interest to the principal balance of your loan. This will increase the principal balance and the total cost of your loan.

A deferment is a period during which you are entitled to postpone repayment of your loans. Interest is not generally charged to you during a deferment on your subsidized loans. Interest is always charged to you during a deferment on your unsubsidized loans.

A forbearance is a period during which you are permitted to postpone making payments temporarily, allowed an extension of time for making payments, or temporarily allowed to make smaller payments than scheduled.

The holder of your Direct Loans is the U.S. Department of Education (the Department). The holder of your FFEL Program loans may be a lender, secondary market, guaranty agency, or the Department. Your loan holder may use a servicer to handle billing, payment, repayment options, and other communications on your loans. References to “your loan holder” on this form mean either your loan holder or your servicer.
A partial financial hardship is an eligibility requirement for the IBR and PAYE plans. You have a partial financial hardship when the annual amount due on all of your eligible loans (or, if you are also required to provide documentation of your spouse’s income, the annual amount due on all of your eligible loans and your spouse’s eligible loans) exceeds 10% (for the PAYE plan and for new borrowers under the IBR plan) or 15% (for those who are not new borrowers under the IBR plan) of the amount by which your adjusted gross income (AGI) exceeds 150% of the annual poverty guideline amount for your family size and state of residence. The annual amount due is calculated based on the greater of (1) the total amount owed on eligible loans at the time those loans initially entered repayment, or (2) the total amount owed on eligible loans at the time you initially request the PAYE or IBR plan. The annual amount due is calculated using a standard repayment plan with a 10-year repayment period, regardless of loan type. When determining whether you have a partial financial hardship for the PAYE plan, the Department will include any FFEL Program loans that you have into account even though those loans are not eligible to be repaid under the PAYE plan, except for: (1) a FFEL Program loan that is in default, (2) a Direct PLUS Loan made to a parent borrower, or (3) a Federal Consolidation Loan that repaid a Direct or Federal PLUS Loan made to a parent borrower. FFEL Program Loans, Federal Perkins Loans, HEAL loans or other health education loans, and private education loans are not eligible to be repaid under the REPAYE plan.

DEFINITIONS FOR THE REPAYE PLAN:

The Revised Pay As You Earn (REPAYE) plan is a repayment plan with monthly payments that are generally equal to 10% of your discretionary income, divided by 12. Discretionary income for the REPAYE plan is the amount by which your adjusted gross income exceeds 150% of the poverty guideline amount for your state of residence and family size. If you are married, your AGI generally includes your spouse’s income regardless of how you file your federal income tax return.

Eligible loans for the REPAYE plan are Direct Loan Program loans other than: (1) a loan that is in default, (2) a Direct PLUS Loan made to a parent borrower, or (3) a Direct Consolidation Loan that repaid a Direct or Federal PLUS Loan made to a parent borrower. FFEL Program Loans, Federal Perkins Loans, HEAL loans or other health education loans, and private education loans are not eligible to be repaid under the REPAYE plan.

DEFINITIONS FOR THE PAYE PLAN:

The Pay As You Earn (PAYE) plan is a repayment plan with monthly payments that are generally equal to 10% of your discretionary income, divided by 12, but will never be more than what you would have paid under the standard repayment plan with a 10-year repayment period based on what you owed when you entered the PAYE plan.

Discretionary income for the PAYE plan is the amount by which your adjusted gross income exceeds 150% of the poverty guideline amount for your state of residence and family size. To initially qualify for PAYE and to continue making payments based on your income under this plan, you must have a partial financial hardship (see definition). If you are married and file a joint federal income tax return, your AGI includes your spouse’s income.

Eligible loans for the PAYE plan are Direct Loan Program loans received by a new borrower other than: (1) a loan that is in default, (2) a Direct PLUS Loan made to a parent borrower, or (3) a Direct Consolidation Loan that repaid a Direct or Federal PLUS Loan made to a parent borrower. FFEL Program Loans, Federal Perkins Loans, HEAL loans or other health education loans, and private education loans are not eligible to be repaid under the PAYE plan.

You are a new borrower for the PAYE plan if: (1) you have no outstanding balance on a Direct Loan or FFEL Program loan as of October 1, 2007 or have no outstanding balance on a Direct Loan or FFEL Program loan when you obtain a new loan on or after October 1, 2007, and (2) you receive a disbursement of a Direct Subsidized Loan, Direct Unsubsidized Loan, or a Direct PLUS Loan made to a student borrower on or after October 1, 2011, or you receive a Direct Consolidation Loan based on an application received on or after October 1, 2011. However, you are not considered a new borrower if the Direct Consolidation Loan you receive repays loans that would make you ineligible under part (1) of this definition.
SECTION 9: DEFINITIONS (CONTINUED)

DEFINITIONS FOR THE IBR PLAN:

The Income-Based Repayment (IBR) plan is a repayment plan with monthly payments that are generally equal to 15% (10% if you are a new borrower) of your discretionary income, divided by 12, but will never be more than what you would have paid under the standard repayment plan with a 10-year repayment period based on what you owed when you entered the IBR plan.

Discretionary income for the IBR plan is the amount by which your adjusted gross income exceeds 150% of the poverty guideline amount for your state of residence and family size. To initially qualify for IBR and to continue making payments based on your income under this plan, you must have a partial financial hardship (see definition). If you are married and file a joint federal income tax return, your AGI includes your spouse's income.

Eligible loans for the IBR plan are Direct Loan and FFEL Program loans other than: (1) a loan that is in default, (2) a Direct or Federal PLUS Loan made to a parent borrower, or (3) a Direct or Federal Consolidation Loan that repaid a Direct or Federal PLUS Loan made to a parent borrower. Federal Perkins Loans, HEAL loans or other health education loans, and private education loans are not eligible to be repaid under the IBR plan.

You are a new borrower for the IBR plan if (1) you have no outstanding balance on a Direct Loan or FFEL Program loan as of July 1, 2014 or (2) have no outstanding balance on a Direct Loan or FFEL Program loan when you obtain a new loan on or after July 1, 2014.

DEFINITIONS FOR THE ICR PLAN:

The Income-Contingent Repayment (ICR) plan is a repayment plan with monthly payments that are the lesser of (1) what you would pay on a repayment plan with a fixed monthly payment over 12 years, adjusted based on your income or (2) 20% of your discretionary income divided by 12.

Discretionary income for the ICR plan is the amount by which your adjusted gross income exceeds the poverty guideline amount for your state of residence and family size. If you are married and file a joint federal income tax return or if you choose to repay your Direct Loans jointly with your spouse, your AGI includes your spouse's income.

Eligible loans for the ICR plan are Direct Loan Program loans other than: (1) a loan that is in default, (2) a Direct PLUS Loan made to a parent borrower, or (3) a Direct PLUS Consolidation Loan (these are Direct Consolidation Loans made based on an application received prior to July 1, 2006 that repaid Direct or Federal PLUS Loans made to a parent borrower). However, a Direct Consolidation Loan made based on an application received on or after July 1, 2006 that repaid a Direct or Federal PLUS Loan made to a parent borrower is eligible for the ICR plan. FFEL Program Loans, Federal Perkins Loans, HEAL loans or other health education loans, and private education loans are not eligible to be repaid under the ICR plan.
Table 1: Income-driven repayment plan eligibility requirements and general information.

<table>
<thead>
<tr>
<th>Plan Feature</th>
<th>REPAYE</th>
<th>PAYE</th>
<th>IBR</th>
<th>IBR for New Borrowers</th>
<th>ICR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment Amount</td>
<td>Generally, 10% of discretionary income.</td>
<td>Generally, 10% of discretionary income.</td>
<td>Generally, 15% of discretionary income.</td>
<td>Generally, 10% of discretionary income.</td>
<td>Lesser of 20% of discretionary income or what you would pay under a repayment plan with fixed payments over 12 years, adjusted based on your income.</td>
</tr>
<tr>
<td>Cap on Payment Amount</td>
<td>None. Your payment may exceed what you would have paid under the standard repayment plan with a 10-year repayment period.</td>
<td>What you would have paid under the standard repayment plan with a 10-year repayment period when you entered the plan.</td>
<td>What you would have paid under the standard repayment plan with a 10-year repayment period when you entered the plan.</td>
<td>What you would have paid under the standard repayment plan with a 10-year repayment period when you entered the plan.</td>
<td>None. Your payment may exceed what you would have paid under the standard repayment plan with a 10-year repayment period.</td>
</tr>
<tr>
<td>Married Borrowers</td>
<td>You must provide income documentation for yourself and your spouse regardless of whether you file a joint or separate Federal income tax return unless you and your spouse (1) are separated or (2) you are unable to reasonably access your spouse's income information.</td>
<td>You must provide income documentation for you and your spouse only if you file a joint Federal income tax return.</td>
<td>You must provide income documentation for you and your spouse only if you file a joint Federal income tax return.</td>
<td>You must provide income documentation for you and your spouse only if you file a joint Federal income tax return.</td>
<td>You must provide income documentation for you and your spouse only if you file a joint Federal income tax return or if you and your spouse choose to jointly repay under the plan.</td>
</tr>
<tr>
<td>Borrower Responsibility for Interest if Payment Does Not Cover All Interest that Accrues</td>
<td>• On subsidized loans, you do not have to pay the difference between your monthly payment amount and the remaining interest that accrues for your first 3 consecutive years of repayment under the plan. • On subsidized loans after the first consecutive 3 years and on unsubsidized loans during all periods, you are only responsible for paying half of the difference between your monthly payment amount and the remaining interest that accrues.</td>
<td>On subsidized loans, you do not have to pay the difference between your monthly payment amount and the remaining interest that accrues for your first 3 consecutive years of repayment under the plan.</td>
<td>On subsidized loans, you do not have to pay the difference between your monthly payment amount and the remaining interest that accrues for your first 3 consecutive years of repayment under the plan.</td>
<td>On subsidized loans, you do not have to pay the difference between your monthly payment amount and the remaining interest that accrues for your first 3 consecutive years of repayment under the plan.</td>
<td>You are responsible for paying all of the interest that accrues.</td>
</tr>
<tr>
<td>Plan Feature</td>
<td>REPAYE</td>
<td>PAYE</td>
<td>IBR</td>
<td>IBR for New Borrowers</td>
<td>ICR</td>
</tr>
<tr>
<td>-------------</td>
<td>--------</td>
<td>------</td>
<td>-----</td>
<td>-----------------------</td>
<td>-----</td>
</tr>
<tr>
<td><strong>Forgiveness Period</strong></td>
<td>• If you only have eligible Direct Loans that you received for undergraduate study, any remaining balance is forgiven after 20 years of qualifying repayment on all of your loans. • If you have any eligible Direct Loans that you received for graduate or professional study, any remaining balance is forgiven after 25 years of qualifying repayment on all of your loans.</td>
<td>Any remaining balance is forgiven after 20 years of qualifying repayment, and may be taxable.</td>
<td>Any remaining balance is forgiven after 25 years of qualifying repayment, and may be taxable.</td>
<td>Any remaining balance is forgiven after 20 years of qualifying repayment, and may be taxable.</td>
<td>Any remaining balance is forgiven after 25 years of qualifying repayment, and may be taxable.</td>
</tr>
<tr>
<td>Forgiveness may be taxable.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Any months when you received an economic hardship deferment are considered the equivalent of qualifying payments, but not any months you received any other type of deferment or months you received any type of forbearance.</td>
<td></td>
<td>Any months when you received an economic hardship deferment are considered the equivalent of qualifying payments, but not any months you received any other type of deferment or months you received any type of forbearance.</td>
<td>Any months when you received an economic hardship deferment are considered the equivalent of qualifying payments, but not any months you received any other type of deferment or months you received any type of forbearance.</td>
<td>Any months when you received an economic hardship deferment are considered the equivalent of qualifying payments, but not any months you received any other type of deferment or months you received any type of forbearance.</td>
</tr>
<tr>
<td><strong>Income Requirement to Enter Plan</strong></td>
<td>None.</td>
<td>You must have a “partial financial hardship”.</td>
<td>You must have a “partial financial hardship”.</td>
<td>You must have a “partial financial hardship”.</td>
<td>None.</td>
</tr>
<tr>
<td><strong>Borrower Eligibility Requirement</strong></td>
<td>You must be a Direct Loan borrower with eligible loans.</td>
<td>You must be a “new borrower” with eligible Direct Loans.</td>
<td>You must be a Direct Loan or FFEL Program borrower with eligible loans.</td>
<td>You must be a “new borrower” with eligible Direct Loans.</td>
<td>You must be a Direct Loan borrower with eligible loans.</td>
</tr>
<tr>
<td><strong>Requirement to Recertify Income and Family Size</strong></td>
<td>Annually. Failure to submit documentation by the deadline will result in the capitalization of interest and being placed on the alternative repayment plan with a payment that will ensure that your loan is paid in full over a period that is the lesser of 10 years or the remainder of 20 or 25 years.</td>
<td>Annually. Failure to submit documentation by the deadline may result in the capitalization of interest and will increase the payment amount to the 10-year standard payment amount.</td>
<td>Annually. Failure to submit documentation by the deadline will result in the capitalization of interest and increase in payment amount to the 10-year standard payment amount.</td>
<td>Annually. Failure to submit documentation by the deadline will result in the capitalization of interest and increase in payment amount to the 10-year standard payment amount.</td>
<td>Annually. Failure to submit documentation by the deadline will result in the recalculation of your payment amount to be the 10-year standard payment amount.</td>
</tr>
</tbody>
</table>
### SECTION 10: INCOME-DRIVEN PLAN ELIGIBILITY REQUIREMENTS AND GENERAL INFORMATION (CONTINUED)

<table>
<thead>
<tr>
<th>Plan Feature</th>
<th>REPAYE</th>
<th>PAYE</th>
<th>IBR</th>
<th>IBR for New Borrowers</th>
<th>ICR</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Leaving the Plan</strong></td>
<td>At any time, you may change to any other repayment plan for which you are eligible.</td>
<td>At any time, you may change to any other repayment plan for which you are eligible.</td>
<td>If you want to leave the plan, you will be placed on the standard repayment plan. You may not change to a different plan until you have made at least one payment under the standard repayment plan or a payment under a reduced-payment forbearance.</td>
<td>If you want to leave the plan, you will be placed on the standard repayment plan. You may not change to a different plan until you have made at least one payment under the standard repayment plan or a payment under a reduced-payment forbearance.</td>
<td>At any time, you may change to any other repayment plan for which you are eligible.</td>
</tr>
<tr>
<td><strong>Interest Capitalization</strong></td>
<td>Interest is capitalized when you are removed from the plan for failing to recertify your income by the deadline or when you voluntarily leave the plan. Otherwise, interest capitalizes at the expiration of a deferment or forbearance.</td>
<td>If you are determined to no longer have a “partial financial hardship” or if you fail to recertify your income by the deadline, interest is capitalized until the outstanding principal balance on your loans is 10% greater than it was when you entered the plan. Interest is also capitalized when you leave the plan.</td>
<td>If you are determined to no longer have a “partial financial hardship”, fail to recertify your income by the deadline, or leave the plan, interest is capitalized.</td>
<td>If you are determined to no longer have a “partial financial hardship”, fail to recertify your income by the deadline, or leave the plan, interest is capitalized.</td>
<td>Interest that accrues when your payment amount is less than accruing interest on your loans is capitalized annually until the outstanding principal balance on your loans is 10% greater than it was when your loans entered repayment.</td>
</tr>
</tbody>
</table>
| **Re-Entering the Plan** | You must provide income documentation for the period when you were not on the REPAYE plan. Your loan holder will calculate the amount you would have been required to pay under the REPAYE plan during that period and compare that to the amount you were required to pay under a different plan over the same period. If the amount you would have been required to pay under the REPAYE plan is more than what you actually paid during this period, your new payment amount under the REPAYE plan will be increased. The increased amount is equal to the difference between what you were required to pay while not on the REPAYE plan and what you would have been required to pay if you had been on the REPAYE plan, divided by the number of months remaining in your 20- or 25-year forgiveness period. | You must again show that you have a “partial financial hardship”.
| | | | | | No restrictions. |
The tables below provide repayment estimates under the traditional and income-driven repayment plans. These figures are estimates based on an interest rate of 6%, the average Direct Loan interest rate for undergraduate and graduate borrowers. The figures also assume a family size of 1, that you live in the continental U.S., and that your income increases 5% each year. Various factors, including your interest rate, your loan debt, your income, and if and how quickly your income rises, may cause your repayment to differ from the estimates shown in these tables. These figures use the 2015 Poverty Guidelines and Income Percentage Factors.

Table 2. Non-Consolidation, Undergraduate Loan Debt of $30,000 in Direct Unsubsidized Loans and Starting Income of $25,000

<table>
<thead>
<tr>
<th>Repayment Plan</th>
<th>Initial Payment</th>
<th>Final Payment</th>
<th>Time in Repayment</th>
<th>Total Paid</th>
<th>Loan Forgiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>$333</td>
<td>$333</td>
<td>10 years</td>
<td>$39,967</td>
<td>N/A</td>
</tr>
<tr>
<td>Graduated</td>
<td>$190</td>
<td>$571</td>
<td>10 years</td>
<td>$42,636</td>
<td>N/A</td>
</tr>
<tr>
<td>Extended-Fixed</td>
<td>Ineligible</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Extended-Graduated</td>
<td>Ineligible</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PAYE &amp; IBR (new borrowers)</td>
<td>$61</td>
<td>$299</td>
<td>20 years</td>
<td>$38,714</td>
<td>$27,164</td>
</tr>
<tr>
<td>REPAYE</td>
<td>$61</td>
<td>$299</td>
<td>20 years</td>
<td>$38,714</td>
<td>$23,672</td>
</tr>
<tr>
<td>IBR</td>
<td>$92</td>
<td>$333</td>
<td>21 years, 6 months</td>
<td>$60,441</td>
<td>$0</td>
</tr>
<tr>
<td>ICR</td>
<td>$197</td>
<td>$255</td>
<td>19 years, 2 months</td>
<td>$51,838</td>
<td>$0</td>
</tr>
</tbody>
</table>

Table 3. Non-Consolidation, Undergraduate/Graduate Loan Debt of $60,000 in Direct Unsubsidized Loans and Starting Income of $40,000

<table>
<thead>
<tr>
<th>Repayment Plan</th>
<th>Initial Payment</th>
<th>Final Payment</th>
<th>Time in Repayment</th>
<th>Total Paid</th>
<th>Loan Forgiveness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>$666</td>
<td>$666</td>
<td>10 years</td>
<td>$79,935</td>
<td>N/A</td>
</tr>
<tr>
<td>Graduated</td>
<td>$381</td>
<td>$1,143</td>
<td>10 years</td>
<td>$85,272</td>
<td>N/A</td>
</tr>
<tr>
<td>Extended-Fixed</td>
<td>$387</td>
<td>$387</td>
<td>25 years</td>
<td>$115,974</td>
<td>N/A</td>
</tr>
<tr>
<td>Extended-Graduated</td>
<td>$300</td>
<td>$582</td>
<td>25 years</td>
<td>$126,173</td>
<td>N/A</td>
</tr>
<tr>
<td>PAYE &amp; IBR (new borrowers)</td>
<td>$186</td>
<td>$615</td>
<td>20 years</td>
<td>$88,314</td>
<td>$41,008</td>
</tr>
<tr>
<td>REPAYE</td>
<td>$186</td>
<td>$819</td>
<td>24 years, 11 months</td>
<td>$131,061</td>
<td>$0</td>
</tr>
<tr>
<td>IBR</td>
<td>$279</td>
<td>$666</td>
<td>18 years, 1 month</td>
<td>$107,385</td>
<td>$0</td>
</tr>
<tr>
<td>ICR</td>
<td>$471</td>
<td>$586</td>
<td>13 years, 8 months</td>
<td>$89,152</td>
<td>$0</td>
</tr>
</tbody>
</table>
Privacy Act Notice. The Privacy Act of 1974 (5 U.S.C. 552a) requires that the following notice be provided to you:

The authorities for collecting the requested information from and about you are §421 et seq. and §451 et seq. of the Higher Education Act of 1965, as amended (20 U.S.C. 1071 et seq. and 20 U.S.C. 1087a et seq.), and the authorities for collecting and using your Social Security Number (SSN) are §§428B(f) and 484(a)(4) of the HEA (20 U.S.C. 1078-2(f) and 1091(a)(4)) and 31 U.S.C. 7701(b). Participating in the Federal Family Education Loan (FFEL) Program or the William D. Ford Federal Direct Loan (Direct Loan) Program and giving us your SSN are voluntary, but you must provide the requested information, including your SSN, to participate.

The principal purposes for collecting the information on this form, including your SSN, are to verify your identity, to determine your eligibility to receive a loan or a benefit on a loan (such as a deferment, forbearance, discharge, or forgiveness) under the FFEL and/or Direct Loan Programs, to permit the servicing of your loan(s), and, if it becomes necessary, to locate you and to collect and report on your loan(s) if your loan(s) becomes delinquent or defaults. We also use your SSN as an account identifier and to permit you to access your account information electronically.

The information in your file may be disclosed, on a case-by-case basis or under a computer matching program, to third parties as authorized under routine uses in the appropriate systems of records notices. The routine uses of this information include, but are not limited to, its disclosure to federal, state, or local agencies, to private parties such as relatives, present and former employers, business and personal associates, to consumer reporting agencies, to financial and educational institutions, and to guaranty agencies in order to verify your identity, to determine your eligibility to receive a loan or a benefit on a loan, to permit the servicing or collection of your loan(s), to enforce the terms of the loan(s), to investigate possible fraud and to verify compliance with federal student financial aid program regulations, or to locate you if you become delinquent in your loan payments or if you default. To provide default rate calculations, disclosures may be made to guaranty agencies, to financial and educational institutions, and to state agencies. To provide financial aid history information, disclosures may be made to educational institutions. To assist program administrators with tracking refunds and cancellations, disclosures may be made to guaranty agencies, to financial and educational institutions, or to federal or state agencies. To provide a standardized method for educational institutions to efficiently submit student enrollment status, disclosures, may be made to guaranty agencies or to financial and educational institutions. To counsel you in repayment efforts, disclosures may be made to guaranty agencies, to financial and educational institutions, or to federal, state, or local agencies.

In the event of litigation, we may send records to the Department of Justice, a court, adjudicative body, counsel, party, or witness if the disclosure is relevant and necessary to the litigation. If this information, either alone or with other information, indicates a potential violation of law, we may send it to the appropriate authority for action. We may send information to members of Congress if you ask them to help you with federal student aid questions. In circumstances involving employment complaints, grievances, or disciplinary actions, we may disclose relevant records to adjudicate or investigate the issues. If provided for by a collective bargaining agreement, we may disclose records to a labor organization recognized under 5 U.S.C. Chapter 71. Disclosures may be made to our contractors for the purpose of performing any programmatic function that requires disclosure of records. Before making any such disclosure, we will require the contractor to maintain Privacy Act safeguards. Disclosures may also be made to qualified researchers under Privacy Act safeguards.

Paperwork Reduction Notice. According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a currently valid OMB control number. The valid OMB control number for this information collection is 1845-0102. Public reporting burden for this collection of information is estimated to average 20 minutes (0.33 hours) per response, including the time for reviewing instructions, searching existing data resources, gathering and maintaining the data needed, and completing and reviewing the information collection. Individuals are obligated to respond to this collection to obtain a benefit in accordance with 34 CFR 682.215, 685.209, or 685.221.

If you have questions regarding the status of your individual submission of this form, contact your loan holder (see Section 7).