

# Payback Time: Easing the Burden of Student Loans

By **Natalie Cox**

By the time most college students graduate, they leave campus holding more than just a diploma and optimism for a bright future. Many are also burdened by tremendous debt.

In 2016, the average graduate was on the hook to repay more than \$37,000 in student loans, and the federal government reported that 1 in 7 borrowers in 2014 had defaulted on their student debt.

This suggests that borrowers have difficulty repaying their student loans. Those with large balances face hefty fixed monthly payments that make it harder to spend money on other things or save for big purchases. And a substantial portion of borrowers have difficulty repaying at all — the New York Fed reports 11.2 percent of aggregate student loan debt was delinquent in 2017.<sup>1</sup>

<sup>1</sup> Quarterly report on Household debt and credit, [https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC\\_2017Q2.pdf](https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/HHDC_2017Q2.pdf).

Policymakers have implemented several solutions to address the twin trends of rising student debt and delinquency: debt forgiveness, loan limits, and restrictions on school eligibility.

And in 2015, the Department of Education introduced REPAYE — the latest of a series in another program called income-driven repayments (IDR).

Intended to aid student borrowers struggling to make their monthly debt payments, IDR programs allow borrowers to repay loans in monthly installments that are based on their income level, not on the actual size of their debt.

Specifically, REPAYE scales payments to 10 percent of aggregate gross income and forgives any debt remaining after 20 to 25 years of repayment (see timeline for other IDR details).

This is in contrast with a traditional “fixed repayment” plan, where

borrowers make 120 constant monthly payments to repay the principal and interest on their loan in 10 years. For borrowers with a high debt-to-income ratio, switching to REPAYE can substantially lower monthly payments. Take, for example, a borrower with \$40,000 in student loan making \$50,000 per year in her first job out of college. Under a 10-year repayment plan, she would pay \$438 per month, whereas under REPAYE she would owe \$266 a month.

IDR enrollment has recently increased in popularity, especially among high-debt borrowers. The program enrolls 6.2 million people, or 27 percent of federal Direct Loan borrowers, but covers more than 43 percent of outstanding loan dollars.<sup>2</sup> As a substantial portion of the Direct Loan portfolio transitions into IDR, it’s important to understand how it helps borrowers in repayment and whom it benefits the most.

In this policy brief, I analyze the insurance that IDR provides to all borrowers, even those who aren’t on the verge of delinquency. We’ll also think about how a key aspect of IDR — its opt-in nature — could impact its ability to prevent delinquency.

<sup>2</sup> As of Q2 2017, see <https://studentaid.ed.gov/sa/about/data-center/student> for data and information on Federal Student Loan Portfolio, Data Source: National Student Loan Data System (NSLDS).

## About the Author



Natalie Cox is a Postdoctoral Fellow in SIEPR’s Young Scholars Program. Her research focuses on student lending and on how the growing use of technology and data is changing the way insurance and lending markets function. She studies household finance, industrial organization and public economics and will join the Princeton economics department as an Assistant Professor in Fall 2018.

**IDR as Social Insurance**

We're familiar with thinking about insurance in a variety of contexts. We buy it to defray costs should something happen to our health, our cars, our homes. These contracts allow us to minimize our exposure to risk. Rather than having to pay for a large unexpected trip to the emergency room, health insurance lets you pay an expected fixed premium each month. In purchasing insurance, we are attempting to make our future spending paths less volatile.

Similarly, we can think of income-driven repayment programs as a form of insurance for student borrowers. Each month, borrowers must take some of their income and make a payment toward their student loan. The leftover income, which the

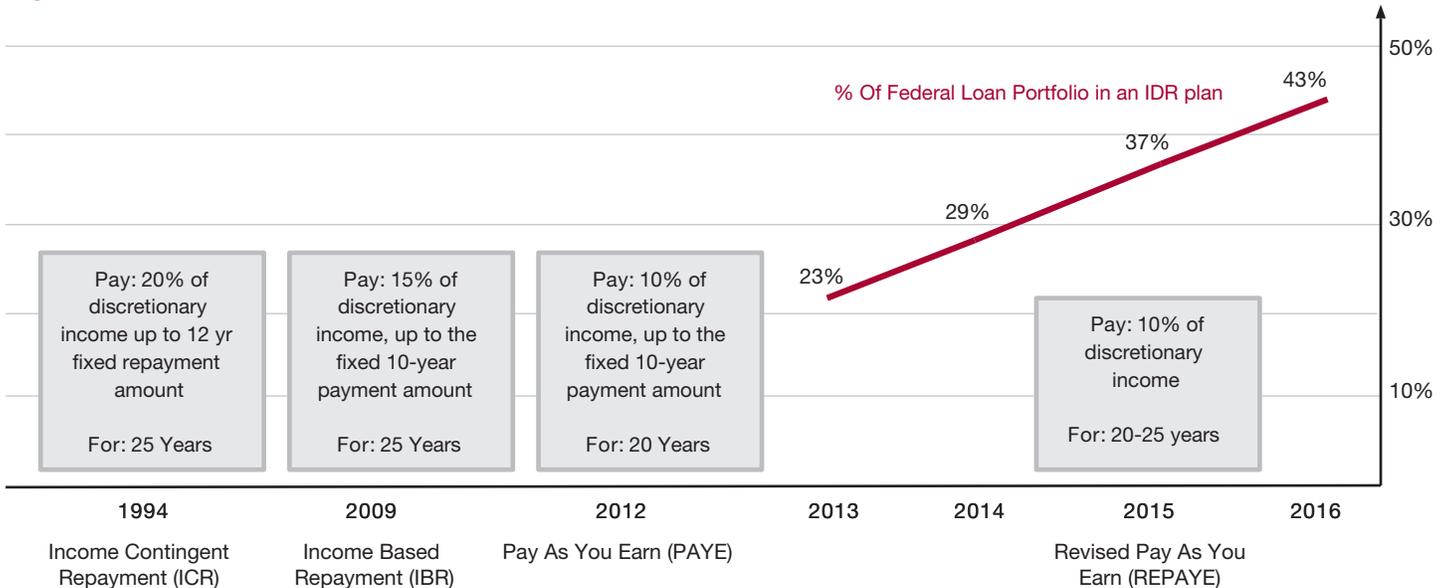
individual might use for food, car payments, rent, etc., we can call consumption. Insurance tries to make this “leftover” consumption less risky — most people prefer to have a certain, rather than unexpected, amount each month.

Income, just like a health shock or car accident, can be risky. Figure 2 shows a hypothetical income path for someone 11 years out of college in gray. In the fourth year, his income falls substantially — perhaps he lost a job or decided to become an entrepreneur. Under a traditional fixed repayment plan, the size of the student debt payment stays the same even when income is low. That means that consumption (in red) falls 1 for 1 with income — it is just as risky and volatile.

The consumption path under the IDR program (see Panel 2) is less volatile than the consumption path under the traditional fixed 10-year repayment program. Payments automatically get smaller when income is low and larger when income is high. One can see this by comparing the minimum and maximum consumption an individual experiences under either plan: paying a percentage of income each month, rather than a fixed monthly payment, reduces the range of consumption from {\$10,000, \$75,000} to {\$15,000, \$70,000}.

Income-driven repayment programs that predated the 2015 REPAYE program provided asymmetric forms of insurance that were especially beneficial to borrowers, who paid the lesser of some percentage of their income or the traditional 10-year

**Figure 1.** IDR Timeline



fixed payment. The two-year-old REPAYE program “smooths” income over both bad **and** good states of nature — this means that individuals have to make larger payments as income increases.

Even if borrowers don’t have a particularly *risky* income stream, they could still benefit from income-driven repayment if their income is growing in the future and they are credit constrained.

Figure 3 shows a typical income path for an individual who has just finished college — income begins low and grows with time. Under

a traditional repayment plan, an individual is hit with a large monthly payment when his income is lowest and no payments when it is higher. IDR again scales the debt payments to the income level, smoothing the consumption profile over an individual’s lifetime.

Notice that in both these scenarios, the IDR plan extends the length of repayment: Most borrowers enrolled in IDR will end up paying their loans off over a longer amount of time with more accrued interest.

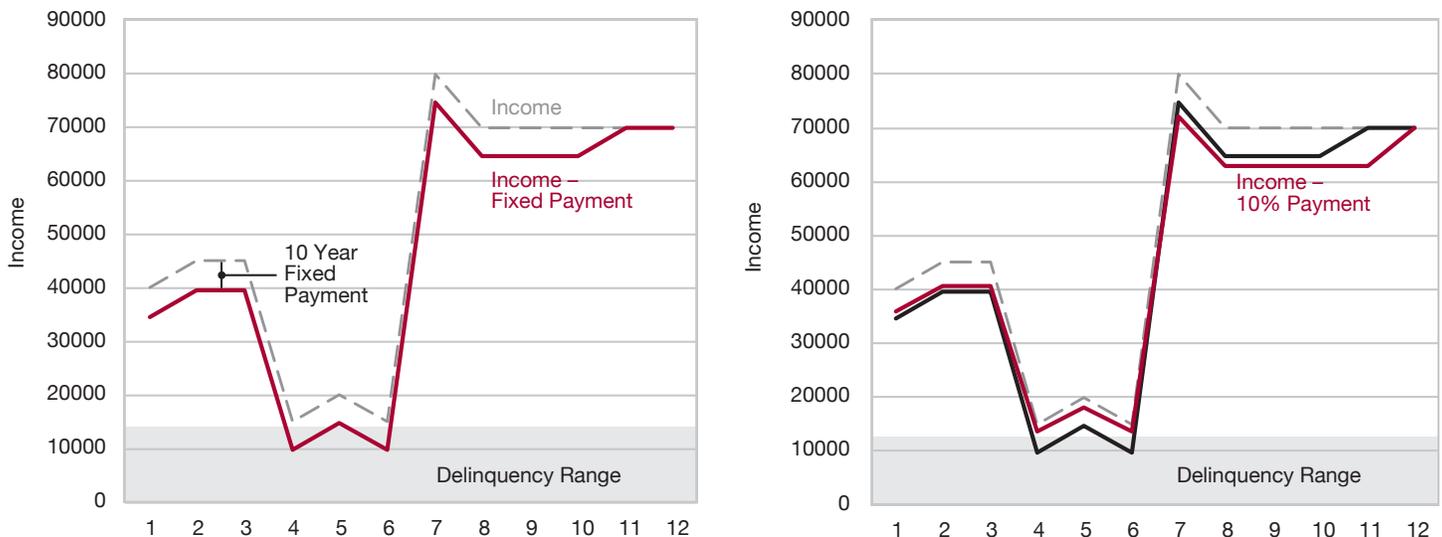
But this shouldn’t be considered a necessarily bad thing.

As in any insurance setting, a risk-averse individual will be willing to pay slightly more in expectation (a “risk premium”) to reduce future uncertainty. And, while more interest may accrue over this longer time horizon, the interest rate charged stays constant and does not increase with repayment length.

## Potential for Moral Hazard

If we’re thinking about IDR as a form of insurance, then it’s natural to analyze its consequences using two closely related economic concepts: **adverse selection** and **moral hazard**.

**Figure 2.** Income and Consumption Paths under a Traditional 10 Year Repayment Plan vs. an Income-Based Repayment Plan, for a hypothetical borrower with volatile income



Panel 1: This shows a hypothetical borrower’s income path and consumption path under a traditional 10 year fixed repayment plan. Their income (the grey line) is volatile and changes from year to year. Each month they have to make the same sized debt payment, regardless of their income level. This means the money they have left over (in red) after making a debt payment can be very low when they have a negative income shock – for example in years 4-6.

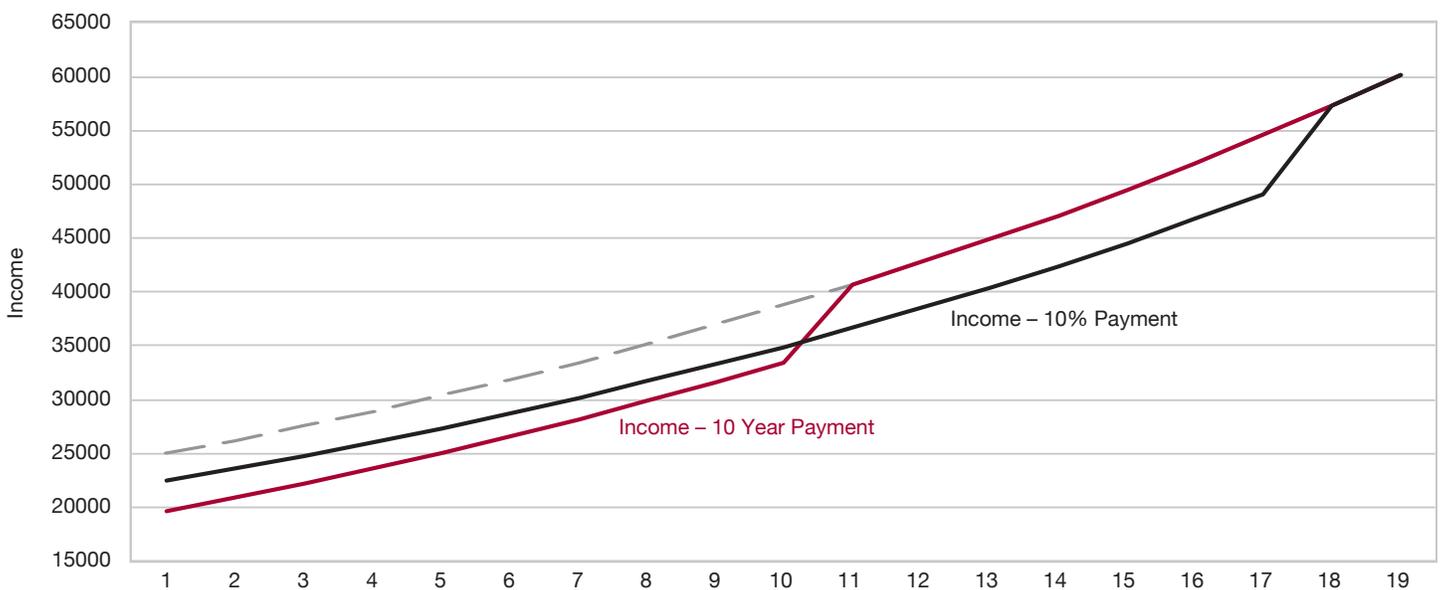
Panel 2: This shows the same hypothetical borrower’s income path and consumption path under an income-based repayment plan. Now their monthly payment is proportional to their income level. This means they make a smaller payment when they have a negative income shock – for example in years 4-6.

Moral hazard refers to changes in an individual’s risk-taking behavior that occur because insurance is provided. One can think of several ways that IDR could change borrowing, schooling, or labor decisions:

- **Individuals might take out more student loans, because they are less worried about the repayment burden when they exit.** On IDR, monthly payments are entirely a function of an individual’s income, not debt amount. This could make borrowing decisions insensitive to the ability to repay: an additional dollar borrowed today will have no impact on the payment size tomorrow.
- **Individuals could choose majors or degrees that are less lucrative or more risky.** IDR removes the fear of being unable to make a debt payment when income is low. However, this impact may be limited — even if I don’t have to worry about making a debt payment every month, I still face other negative consequences associated with having a low income. I can’t take many vacations, I can’t make “frivolous” purchases, I can’t save for a house. Furthermore, society might consider this a *positive* impact of IDR, if less financially constrained student choices are thought preferable.
- **Individuals might postpone employment or make riskier occupation choices.** There is empirical evidence to suggest this effect might be small. Economists have extensively studied this phenomenon for a similar form of social insurance, unemployment benefits. Most studies have found a positive, but very small, impact of increased benefit generosity on unemployment length<sup>3</sup>: One study estimated the average

3 For example, Card and Levine 2000, <http://davidcard.berkeley.edu/papers/extended-benefits-ui.pdf>; Jurajda and Tannery 2003, <http://journals.sagepub.com/doi/abs/10.1177/001979390305600207>.

**Figure 3.** Income and Consumption Paths under a Traditional 10 Year Repayment Plan vs. an Income-Based Repayment Plan, for a hypothetical borrower with growing income



duration of unemployment would have been shortened by about two weeks, from 4.89 months to 4.55 months in 2009 if there had been no unemployment insurance available.<sup>4</sup>

It is important to consider these behavioral responses when budgeting for an IDR plan. While IDR might reduce default and delinquency costs for the government, it can increase costs by extending the repayment horizon and resulting in potential loan forgiveness after 20 years. All of these responses, by increasing loan size or repayment time, would *increase* the projected costs of an IDR program relative to a scenario in which borrower behavior was fixed. In the United Kingdom, where student loan repayment is entirely income based, the realized costs of the program far exceeded those that were forecast, with 50 percent of students not expected to earn enough to repay all of their loan.<sup>5</sup>

### Adverse, or Advantageous, Selection into Income-Driven Repayment?

As noted earlier, IDR programs mark a substantial effort by the federal government to slow the rising rate of default and delinquency among student loan borrowers. Our above

analysis suggests that by smoothing consumption, IDR could have this intended effect. If individuals miss payments when consumption falls below a certain level, then IDR will also help reduce default and delinquency rates. A recent report by the Government Accountability Office suggests that it is having this intended effect: Default rates are .1-.5 percent in IDR programs, compared with 14 percent in standard repayment programs.

However, it is important to note that IDR is an “opt-in” program — borrowers must fill out paperwork to sign up for IDR and renew their status annually. Borrowers select into the program rather than being automatically enrolled. This means the low IDR delinquency rate could be driven by a **causal** impact of lower monthly payments, or simply by **selection** of low- risk borrowers into the program.

Why would low-risk borrowers be the most likely to select into a program like IDR? In theory, individuals who stand to gain the most from an insurance contract should be the first to sign up. This leads to a classic case of **adverse selection**, in which the riskiest individuals (here borrowers with the lowest, riskiest income) are the most likely to select into an insurance contract, increasing overall costs.

In practice, many economic studies have found that adverse selection seldom occurs. A host of other factors — risk aversion, misinformation, inertia, high switching or hassle

costs — can often *reverse* the selection patterns economic theory would predict, leading instead to **advantageous selection**. In health insurance, for example, the healthiest individuals often purchase the most comprehensive coverage, explained perhaps by higher levels of risk aversion (Fang, Keane, Silverman)<sup>6</sup>. In car insurance, drivers who choose more extensive coverage have fewer accidents (Chiappori and Salanie, 2000).<sup>7</sup> Many who purchase long-term care insurance are less likely to use a nursing home and more likely to be cautious and invest in preventive health activities (Finkelstein and McGarry, 2006).<sup>8</sup>

There are a number of anecdotes that suggest the misinformation and hassle costs are high in the context of IDR — the Consumer Financial Protection Bureau (CFPB) recently published a report citing that the top federal student loan servicing complaints had “to do with income-driven repayment plans”.<sup>9</sup> Borrowers complained that paperwork was complicated, prone to errors, and that the annual recertification requirements were burdensome.

6 [https://web.stanford.edu/group/SITE/archive/SITE\\_2006/Web%20Session%204/Fang.pdf](https://web.stanford.edu/group/SITE/archive/SITE_2006/Web%20Session%204/Fang.pdf).

7 <https://ideas.repec.org/a/ucp/jpolec/v108y2001i1p56-78.html>.

8 <https://www.aeaweb.org/articles?id=10.1257/aer.96.4.938>.

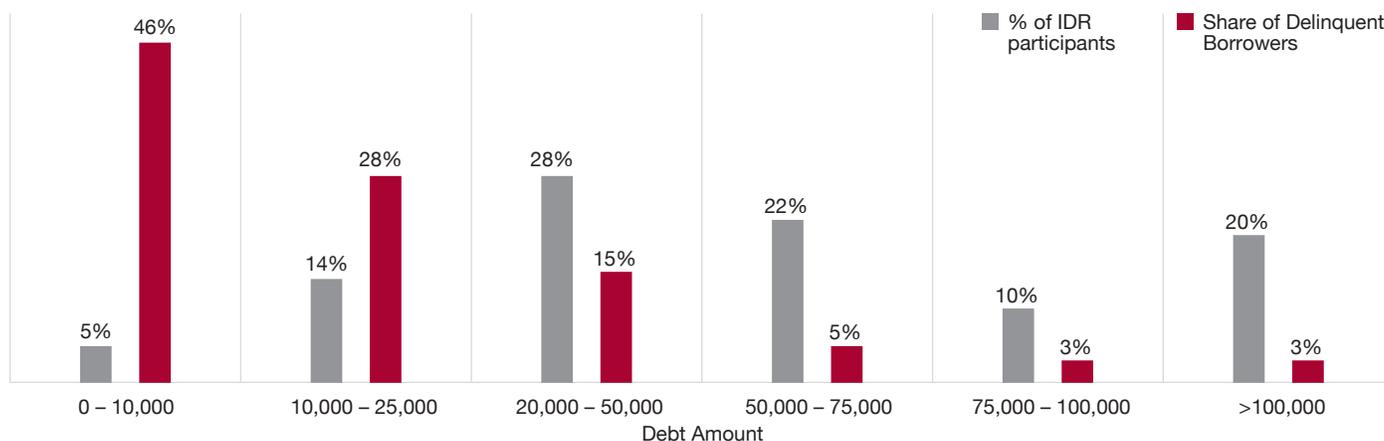
9 <https://www.consumerfinance.gov/about-us/newsroom/consumer-financial-protection-bureau-finds-consumers-complain-needless-hurdles-applying-lower-student-loan-payments/>.

4 Farber and Valletta, <http://www.frbsf.org/economic-research/files/wp2013-09.pdf>.

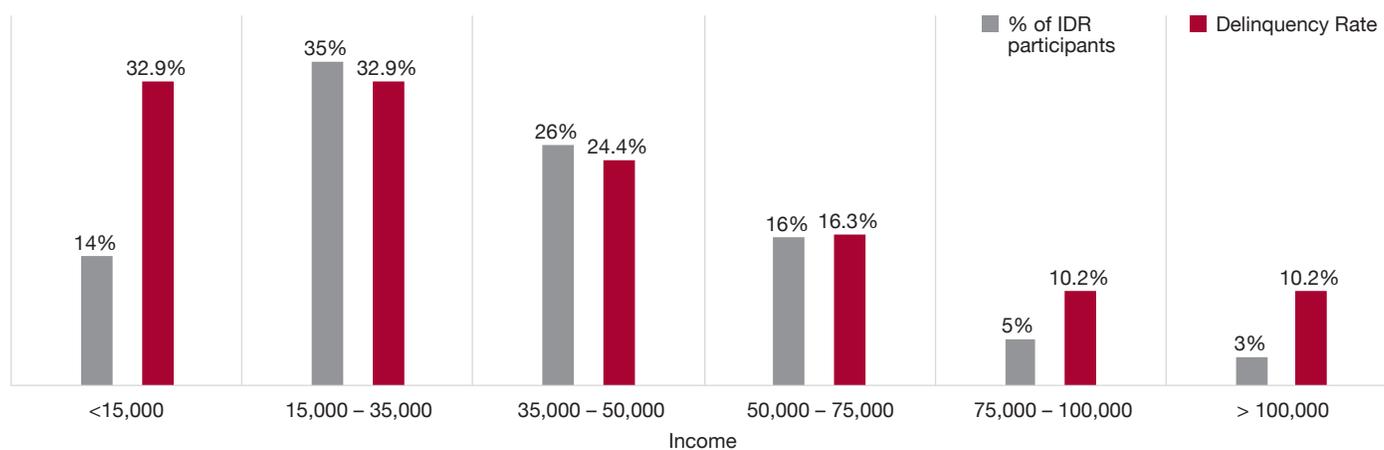
5 [https://www.nao.org.uk/wp-content/uploads/2013/11/10307-001-Student-loan-repayments\\_BOOK-ES.pdf](https://www.nao.org.uk/wp-content/uploads/2013/11/10307-001-Student-loan-repayments_BOOK-ES.pdf).

**Figure 4.** IDR Enrollment Rates and Delinquency Rates, by Debt Amount, Income, and Degree

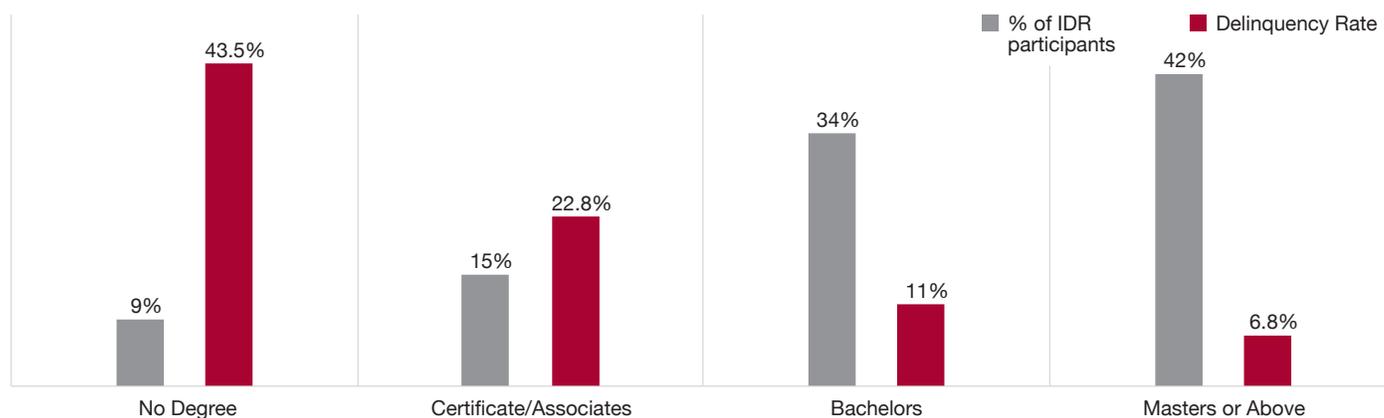
Panel 1: IDR Enrollment and Delinquency, by Debt Amount



Panel 2: IDR Enrollment and Delinquency, by Income



Panel 3: IDR Enrollment and Delinquency, by Degree



Degree type (source: <https://www.federalreserve.gov/econresdata/feds/2015/files/2015098pap.pdf>)

If borrowers who miss payments are also more likely to be uninformed of repayment options or dissuaded by hassle costs — i.e., if there is a *negative correlation* between borrower risk and selection into IDR — then adverse selection is unlikely to occur.

While comprehensive microdata on IDR enrollment has yet to be released, we can look for signs of selection using summary statistics. Figure 4 compares delinquency rates and IDR enrollment across different groups of borrowers. Delinquency rates tend to be highest among low-debt borrowers, while IDR enrollment is concentrated among high-debt borrowers (see Panel 1). Similarly, a large portion of IDR enrollees (42 percent) hold graduate degrees, which is a population with very low delinquency rates (see Panel 3).

While not conclusive, these descriptive statistics suggest that

IDR may be missing the mark when it comes to enrolling the highest delinquency risk population. However, it is enrolling the highest debt population (graduate degree recipients have much higher levels of debt than bachelor degree recipients), who will benefit from the consumption smoothing benefits of the program.

## Conclusion

What does this analysis tell us? Borrowers with volatile or growing incomes will benefit from the insurance value of a program like IDR, as it allows them to “smooth” their payments over high- and low-income periods. However, the opt-in nature of the program means it may not have an aggregate impact on delinquency rates, especially if there is a negative correlation between **enrollment** and **borrower risk**.

From a policy perspective, this means that while policymakers currently control the size and availability of IDR benefits, they have less control over *whom* they impact. One way to address this is through **automatic enrollment** in income-driven repayment. However, before placing all borrowers in an income-driven repayment plan (such as in the U.K. or Australia) policymakers may want to wait to gauge the presence or scope of moral hazard. It may take several years for these effects to become apparent, as young borrowers move through school and gradually become aware of the IDR option. Automatic enrollment for certain groups of borrowers — for example borrowers who have recently been delinquent or are above a certain debt-to-income threshold — might be a more cautious way to reach borrowers who are most in need.

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