Framing Effects, Earnings Expectations, and the Design of Student Loan Repayment Schemes

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Motivation

Large average private returns to a college degree <small>(Barrow & Malamud 2015)</small>

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Rising college prices, stagnant family income $\Rightarrow$ growing reliance on student loans in the U.S.

- ▶ Outstanding student loans = \$1.5T (FRBNY 2019)
- ▶ Largest unsecured consumer credit market

Motivation

Concerns over students' ability to repay loans

- ▶ Rising delinquency and default rates (11% in 3 years, est. 26% lifetime risk)
- ▶ Potential spillovers to borrowers' career decisions (Rothstein & Rouse 2011), housing markets (Mezza et al. 2016), entrepreneurship (Ambrose et al. 2015)

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Policy response: expansion of *income-driven repayment programs*

Income-driven Repayment

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- ▶ Information asymmetries => adverse selection

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Key characteristic: loan payments depend on income

IDR schemes provide *insurance* against *unaffordable loan payments* (Chapman 2006)

▶ Information asymmetries => adverse selection
▶ May depend on salience of insurance benefits

Two broad categories of IDR

Fixed amount

- ▶ Payments conclude when principal + interest = $0 or when repayment period ends
- ▶ One of several repayment options in US
- ▶ Universal repayment program in Australia, NZ, S Africa, UK, Hungary, S Korea, and Netherlands

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Fixed length

- ▶ Aka "Income share agreement", "human capital contract"
- ▶ Payment/in-kind subsidy in exchange for contract over future earnings for set period of time
- ▶ Offered by 8 colleges (e.g., Purdue University's "Back a Boiler", University of Utah's "Invest in U" , considered by 21 states

IDR in the U.S.

Multiple programs (ICR, IBR, PAYE, REPAYE)

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Low take-up despite generosity, outreach efforts

- ▶ <30% of borrowers in repayment (College Board 2018) [link]
- ▶ At least 50% likely qualify (Hershbein et al. 2014)

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Students must opt-in

▶ Default plan: 10-year fixed payment

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Adverse selection?

- ▶ Federal borrowers in IDR have > average balances
- ▶ No selection on observed ability for Purdue students (Mumford 2018)

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- ▶ No evidence of bunching at repayment thresholds in Australia or UK
  (Chapman & Leigh 2009; Britton & Gruber 2019)

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Effects on student outcomes?

- ▶ Reduced defaults, outstanding debt for older cohorts of delinquent borrowers
  (Herbst 2019)
- ▶ Muted negative effects of housing price shocks during Great Recession
  (Mueller & Yannelis 2018)

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Ultimately, very little. Hampered by:

- ▶ Lack of access to data on IDR participation, payments, and earnings
- ▶ Relatively new, small scale fixed length IDR options

Current Framing Emphasizes Costs, Minimizes Benefits

Repayment Plan	First Monthly Payment	Last Monthly Payment	Total Amount Paid	Projected Loan Forgiveness ❶	Repayment Period
Standard ❶	$318	$318	$38,184	$0	120 months
Graduated ❶	$180	$540	$40,294	$0	120 months
Revised Pay As You Earn (REPAYE) ❶	$102	$401	$51,982	$0	234 months
Pay As You Earn (PAYE) ❶	$102	$318	$52,358	$252	240 months
Income-Based Repayment (IBR) ❶	$152	$318	$44,377	$0	175 months

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Assumptions:

▶ Discount rate = 0

▶ Income growth = 5% per year

▶ 0% probability of unemployment

[Quote] [Exit counseling]

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- ► Expected labor market outcomes
- ► Preferences over hypothetical repayment plans
- ► Random assignment of key IDR plan parameters

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▶ Other factors in decision: hassle costs, default bias (Cox et al. 2018; Mueller & Yannelis 2019)

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Stated preferences of repayment plans $\neq$ realized choices

- ▶ Other factors in decision: hassle costs, default bias (Cox et al. 2018; Mueller & Yannelis 2019)
- ▶ Few borrowers (even at UMD) know of current IDR options (Anderson et al. 2018)

Survey Design

Invited to participate in survey (N = 25,435)
- UMD undergraduates, age 18-29
- Citizens or permanent residents

Initial invitation + 3 reminder emails

Incentive: lottery to win iPad Air (3)

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Survey content:

1. Demographics	2. Expected labor market outcomes	3. Hypothetical loan repayment scenarios	4. Adtl. Questions:
			Other debt
			Risk aversion
			Financial literacy

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Expected Labor Market Outcomes

Expectations at graduation, 30, and 40 years old for:

- ▶ Earnings [link]
- ▶ Probability of nonemployment [link]
- ▶ Probability of earnings w/in $(0, 35K]$, $(35, 75K]$, $75K+$

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Correlated with realized outcomes for BA recipients within broad major categories in ACS [Estimates] [Figure]

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 At graduation, age 30, age 40 | 3. Hypothetical loan repayment scenarios | 4. Adtl. Questions:

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 Financial literacy |

UMD Survey: Hypothetical Repayment Plans

You will be asked to assume that **you are about to graduate from the University of Maryland** and that you have borrowed a specific amount of money to pay for your education.

All you need to do is **read the descriptions of the two options and tell us which one you prefer**.

There is no right or wrong answer—we just want to understand how you would think about what to do in this situation given your expectations about your earnings.

UMD Survey: Hypothetical Repayment Plans

To keep things as simple as possible, when you are making your choice please assume that:

- ▶ Once you have chosen a repayment plan, you cannot change it.
- ▶ Payments start six months after graduation.
- ▶ Repayment obligations are paused in graduate school.
- ▶ You are answering just for yourself, not thinking about how a spouse's income or debt might affect your answers.

UMD Survey: Hypothetical Repayment Plans

You will graduate from the University of Maryland this May.
You have borrowed **$30,000** to pay for your education. You
will not be required to begin making payments until December
2016.

You will need to choose one of the following repayment plans:

UMD Survey: Hypothetical Repayment Plans

Plan A	Plan B
• You will pay back the money you owe over the next 10 years.	• You will make monthly payments on your loan for up to the next 20 years. Your payments will stop once you have paid off your loan. Any money that you still owe after 20 years will be forgiven.
• You will make a fixed monthly payment of $318 per month, which will cover both the interest that you owe and your loan principal.	• You will not make payments in any month in which your income is less than $1,000 (in 2016 dollars). • In months when your income exceeds $1,000, your payments will equal 15% of the amount you earn above $1,000. • If you make no payment or if your payment isn't enough to cover the interest you owe, any unpaid interest will be added to your loan balance.

Survey Design

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3. Hypothetical loan
repayment scenarios

Stratified random assignment:

Gender

Class standing (freshman, sophomore, junior, senior, new transfer)

Major (STEM/business/economics, other, undecided)

SAT percentile

Survey Design

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3. Hypothetical loan repayment scenarios

Loan size

$60,000 $30,000

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IDR framing

Cost   Neutral   Insurance

"Cost" Frame

• With this plan, you know exactly how much you will have to pay each month for the next 10 years. Over the life of the loan, in addition to repaying the amount you borrowed, you will pay a total of $8,184 in interest.	• With this plan, you could end up paying substantially more than you would pay under Plan A and you could be required to make payments for a longer period of time.

"Insurance" Frame

<table>
<tr>
<td>

- With this plan, you will be required to make the monthly payment of \$318 for the next ten years even in months when your income is low. You could face the risk of defaulting on your loan if you cannot make the required monthly payment.

</td>
<td>

- With this plan, you will be protected against having to make unaffordable payments when your income is low and you will be protected from the risk of default.

</td>
</tr>
</table>

Survey Design

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$60,000 $30,000

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Type of IDR

Fixed amount   Fixed length

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IDR framing

Cost   Neutral   Insurance

Type of IDR

Fixed amount

IDR rate: 15, 20% of income

Fixed length

IDR rate: 6, 10% of income

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3. Hypothetical loan repayment scenarios

Loan size

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Scenario order (low versus high rate first)

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3. Hypothetical loan repayment scenarios

24 treatment arms

4,399 respondents (core questions)

17% response rate

Loan size

$60,000 $30,000

IDR framing

Cost   Neutral   Insurance

Type of IDR

Fixed amount   Fixed length

Scenario order (low versus high rate first)

[Selection]   [Balance]   [Fixed length IDR]
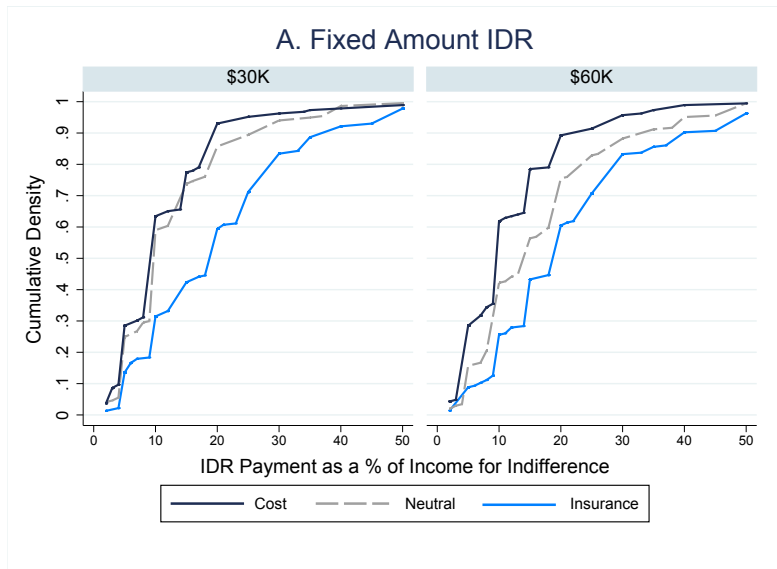
Willingness to Pay for IDR

What percentage in the payment formula for Plan B would make you indifferent between the two plans?

Setting payments under Plan B to equal _____% of my monthly earnings above $1,000 in Plan B would make me indifferent between Plan A and Plan B.

Willingness to Pay for IDR by Framing

A. Fixed Amount IDR

Willingness to Pay for IDR by Framing

B. Fixed Length IDR
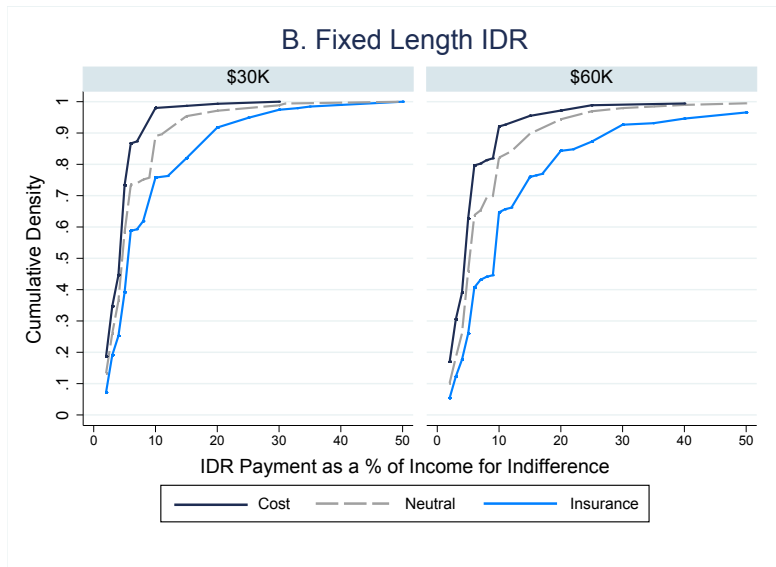
Empirical Framework

$$Y = \alpha + \beta^T \mathbf{Treat^T} + \delta^T \mathbf{f}\left(\mathbf{earnings}, \mathbf{Treat^T}\right) + \gamma \mathbf{X} + \epsilon$$

Where:

- Y is outcome of interest (prefers plan B, preference, percentage of income required for indifference)
- $\mathbf{Treat^T}$ is a vector of treatment parameters (framing, loan size, payment as percentage of income)
- $\mathbf{earnings}$ is a vector of earnings expectations measures
- $\mathbf{X}$ includes controls for strata (class standing, gender, SAT percentile, major)

Estimated separately for students assigned to fixed payment length versus fixed payment amount scenarios

Large Effects of Framing on IDR Take-Up

	(1) Fixed payment amount	(2) Fixed payment length
Mean / neutral framing	*0.279*	*0.197*
Framing (rel. to neutral)		
Cost	-0.141	-0.116
	(0.019)**	(0.015)**
Insurance	0.185	0.179
	(0.022)**	(0.020)**
Test of eq. (p-val)	*<0.001*	*<0.001*
Loan size ($10k)	0.020	0.026
	(0.006)**	(0.005)**
Payment as % of income	-0.011	-0.014
	(0.002)**	(0.002)**
Observations	4,440	4,358

Notes: Robust standard errors, clustered at the student level in parentheses; ** $p<0.01$, * $p<0.05$, + $p<0.1$. [Willingness to pay for IDR]

Robustness of Framing Effects

Estimates are robust to:

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- ▶ Exclusion/addition of controls for: demographics, risk aversion, financial literacy [link]

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- ▶ Reweighting sample based on characteristics of undergraduate BA-degree seeking borrowers (2012 NPSAS) [link]

Expected Labor Market Outcomes and IDR Preferences

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- ▶ Significant correlation with expected probability of **low or no earnings** [link] [CDFs]

Heterogeneous Effects of Framing

	(1) Fixed payment amount	(2) Fixed payment length
Framing (rel. to neutral)		
Cost	-0.098	-0.054
	(0.028)**	(0.021)*
Insurance	0.137	0.138
	(0.033)**	(0.029)**
Pr(earnings < $35k)		
ˣ Cost framing	0.047	-0.019
	(0.036)	(0.026)
ˣ Neutral framing	0.144	0.135
	(0.046)**	(0.039)**
ˣ Insurance framing	0.261	0.232
	(0.046)**	(0.046)**
Test of equality (p-value)	*0.001*	*<0.001*
Observations	4,440	4,358

Heterogeneous Effects of Framing

Additional sources of heterogeneity:

▶ Smaller effects of insurance framing for STEM/business/economics majors [link]

▶ Larger effects of framing for more risk averse and female students [link]

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No significant/consistent heterogeneity in framing effects by:

▶ Loan amount, IDR payment rate [link]

▶ Financial literacy, race, actual borrowing, first generation status [link]

▶ Expected experience-earnings profile, probability of low/$0 earnings at age 30 or 40 [link]

Simulated Effects on Govt Revenue, Defaults

Simulation Exercise

Goal: measure effect of varying frame and IDR payment rate on take-up, payments, and defaults

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Parameterized experience-earnings profile following Wiswall & Zafar (2015)

- Borrower with potential experience a, $earn_a \sim N(\mu_a, \sigma_a)$, where:
  - $\mu_a = \mu_0 + \mu_1 exp + \mu_2 exp^2$
  - $\sigma_a = \sigma_0 + \sigma_1 exp$
  - Estimate $\theta = \{\mu_0, \mu_1, \mu_2, \sigma_0, \sigma_1\}$ via simulated method of moments
- Interpolate Pr($0 earnings)

Simulation Exercise

Simulate aggregate payments and defaults under universal IDR, universal standard plan, and choice for a given frame and IDR payment rate

- ▶ # of draws to represent underlying population of interest (BA-degree seeking borrowers)

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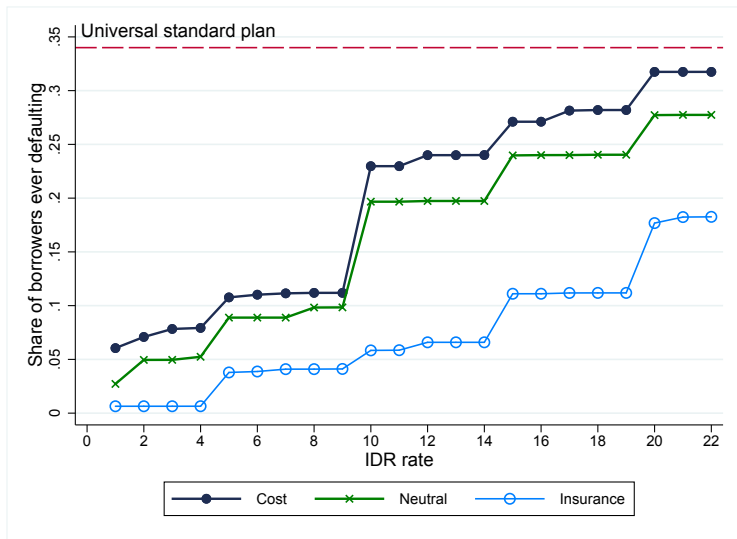
Assumptions:

▶ Choose IDR when payment rate < rate that would make indifferent

▶ Default if standard plan payment > 50% of earnings for 2 consecutive years

▶ 3% discount rate

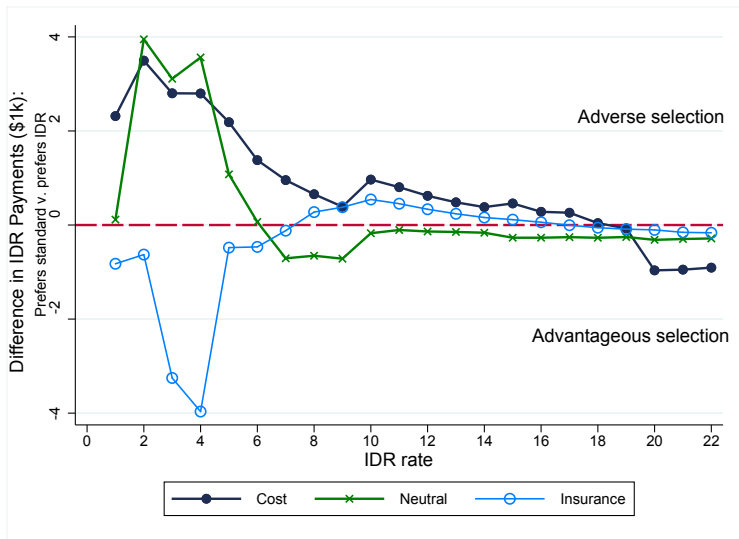# Fixed Amount IDR Take-up by IDR Rate and Frame
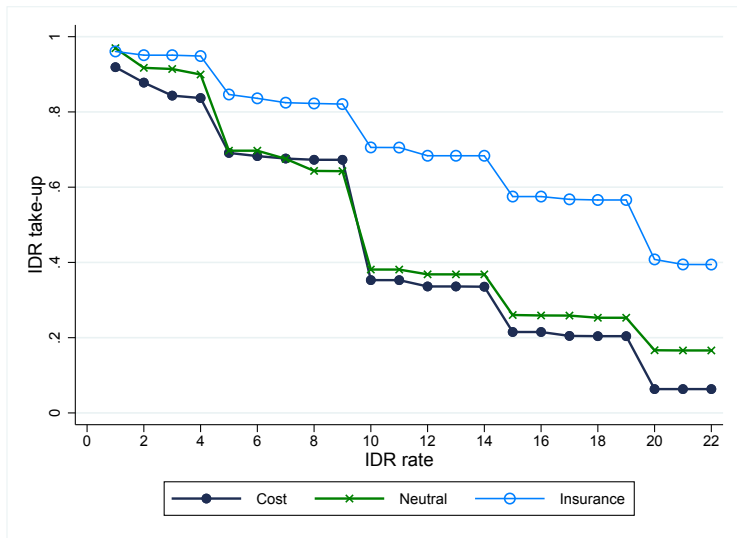
Share of Loans Ever Defaulting

Notes: Probability that required loan payment given plan choice > 50% of income for 2 consecutive years over 20 years after leaving school. Students choosing IDR are assumed to never default.

Selection into Fixed Amount IDR

Notes: 5% interest rate for standard plan. 3% discount rate. Totals over 20 years after leaving school. Difference in revenue ($1k) collected under IDR between students that choose the standard plan and students that choose IDR per $45K loan.

PDV of Payments at 20 Years
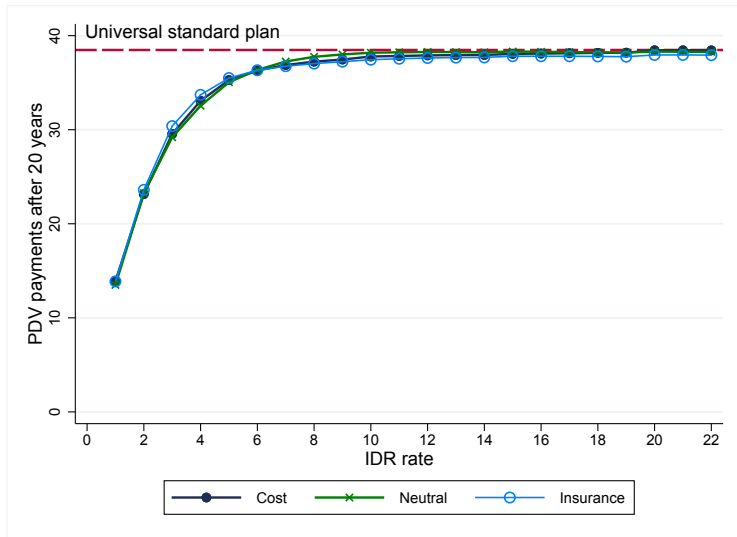
[PDV payments at 10 years]

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Expected risk of bad labor market outcome matters most when insurance aspect of IDR is emphasized

▶ Risk/cost of bad outcome more salient

Framing matters when considering trade-off between revenue and student defaults

▶ Cost => neutral frame: large reduction in default risk with small/no loss in revenue

Thank you!

Eliciting Labor Market Expectations

The next few questions relate to what you expect to be earning at different points in the future.

What do you expect to earn **in the first full calendar year after you graduate from college**?

Please round to the nearest thousand.

$_____,000 per year

[Back]

Eliciting Labor Market Expectations

What do you think the chances are that you will be unemployed or not working for pay, earn up to $35,000, earn $35,001 to $75,000 or earn more than $75,000 **when you are 30 years old**?

Please answer in terms of today's dollars. The percentages you give should add up to 100 percent.

Percent chance you will be unemployed or not working for pay	0	%
Percent chance your annual earnings will be $35,000 or less	0	%
Percent chance your annual earnings will be $35,001 to $75,000	0	%
Percent chance your annual earnings will be more than $75,000	0	%
Total	0	%

[Back]

Risk Aversion

In general, how willing are you to take risks in financial matters? Please tick a box on the scale, where the value 0 means: "not at all willing to take risks" and the value 10 means: "very willing to take risks".

Not at all willing to take risks										Very willing to take risks
0	1	2	3	4	5	6	7	8	9	10
○	○	○	○	○	○	○	○	○	○	○

More risk averse: ≤ 4 (robust to different definitions)

[Back]

Financial Literacy

Suppose you owe $1,000 on your credit card and the interest rate you are charged is 20% per year compounded annually. If you didn't pay anything off, at this interest rate, how many years would it take for the amount you owe to double?

- ○ Less than 2 years
- ○ 2 to 4 years
- ○ 5 to 10 years
- ○ 11 or more years
- ○ Not sure

Suppose you owe $3,000 on your credit card. The Annual Percentage Rate (APR) on the balance owed is 12% (or 1% per month). You make a payment of $30 each month. How many years would it take to eliminate your credit card debt if you made no additional new charges?

- ○ Less than 5 years
- ○ 5 to 10 years
- ○ 11 to 15 years
- ○ More than 15 years
- ○ Never, you will continue to be in debt
- ○ Not sure

Questions adapted from Lusardi & Tufano (2009)
Financially literate: answered at least one question correctly (skipped question = incorrect answer) [Back]

Robustness of Framing Effects: Adtl. Controls

| | Fixed payment amount | | | Fixed payment length | | |
	(1)	(2)	(3)	(3)	(4)	(5)
Framing (rel. to neutral)						
Cost	-0.141	-0.140	-0.139	-0.116	-0.114	-0.117
	(0.019)**	(0.019)**	(0.019)**	(0.015)**	(0.015)**	(0.015)**
Insurance	0.185	0.185	0.186	0.179	0.177	0.180
	(0.022)**	(0.022)**	(0.022)**	(0.020)**	(0.020)**	(0.020)**
Test of eq. (p-val)	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Loan size ($10k)	0.020	0.020	0.020	0.026	0.026	0.026
	(0.006)**	(0.006)**	(0.006)**	(0.005)**	(0.005)**	(0.005)**
Payment as % of income	-0.011	-0.011	-0.011	-0.014	-0.014	-0.014
	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**
Observations	4,440	4,440	4,440	4,358	4,358	4,358
Adtl. admin controls		X			X	
Controls for RA, FL, debt			X			X

Notes: Column 2 and 4 specifications include controls for race, first generation student, any borrowing at UMD, in-state student, missing GPA, 2015-16 FAFSA completion, and continuous measures of age, total loans received at UMD, total grants received at UMD, 2015-16 EFC, and GPA.. Columns 3 and 5 specifications control for number of correct financial literacy questions, willingness to take risks (1-10), self reported UMD student loans, credit card debt, auto loans, loans from family members, other unsecured debt, other secured debt, and indicators for skipping risk aversion and debt questions. [Back]

Robustness of Framing Effects: Sample Selection

	Fixed payment amount			Fixed payment length		
	(1)	(2)	(3)	(3)	(4)	(5)
Framing (rel. to neutral)						
Cost	-0.141	-0.147	-0.117	-0.116	-0.123	-0.107
	(0.019)**	(0.024)**	(0.026)**	(0.015)**	(0.020)**	(0.020)**
Insurance	0.185	0.215	0.175	0.179	0.168	0.153
	(0.022)**	(0.029)**	(0.030)**	(0.020)**	(0.027)**	(0.027)**
Test of eq. (p-val)	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Loan size ($10k)	0.020	0.024	0.015	0.026	0.032	0.024
	(0.006)**	(0.007)**	(0.008)+	(0.005)**	(0.007)**	(0.006)**
Payment as % of income	-0.011	-0.020	-0.013	-0.014	-0.028	-0.016
	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**	(0.002)**
Observations	4,440	2,566	2,422	4,358	2,496	2,400
Drop irrational		X			X	
Drop low fin. literacy			X			X

Notes: Column 2 and 4 specifications drop respondents with inconsistent responses to the hypothetical loan scenario questions and/or stated percentage of income that would make them indifferent between the standard plan and IDR.. Columns 3 and 5 specifications drop respondents who answered both financial literacy questions incorrectly. [Back]

Robustness of Framing Effects: Reweighting

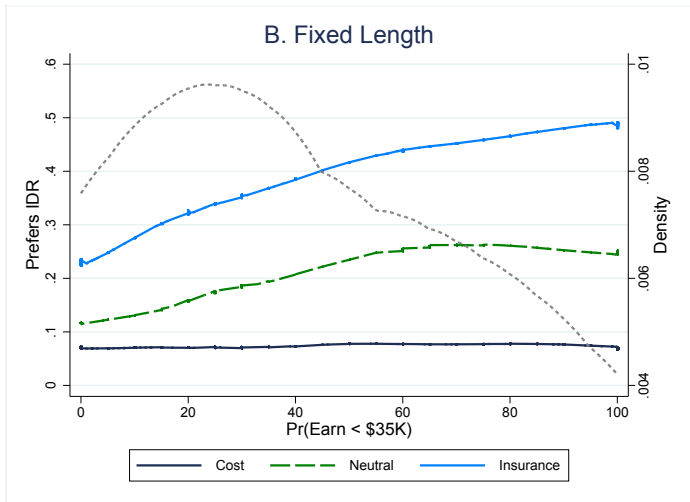|	Fixed payment amount		Fixed payment length	
	(1)	(2)	(3)	(4)
Mean / neutral framing	*0.279*	*0.302*	*0.197*	*0.224*
Framing (rel. to neutral)				
Cost	-0.141	-0.175	-0.116	-0.119
	(0.019)**	(0.032)**	(0.015)**	(0.028)**
Insurance	0.185	0.167	0.179	0.155
	(0.022)**	(0.037)**	(0.020)**	(0.035)**
Test of eq. (p-val)	*<0.001*	*<0.001*	*<0.001*	*<0.001*
Loan size ($10k)	0.020	0.025	0.026	0.030
	(0.006)**	(0.010)**	(0.005)**	(0.008)**
Payment as % of income	-0.011	-0.011	-0.014	-0.010
	(0.002)**	(0.003)**	(0.002)**	(0.004)**
Observations	4,440	4,440	4,358	4,358
Reweighted		X		X
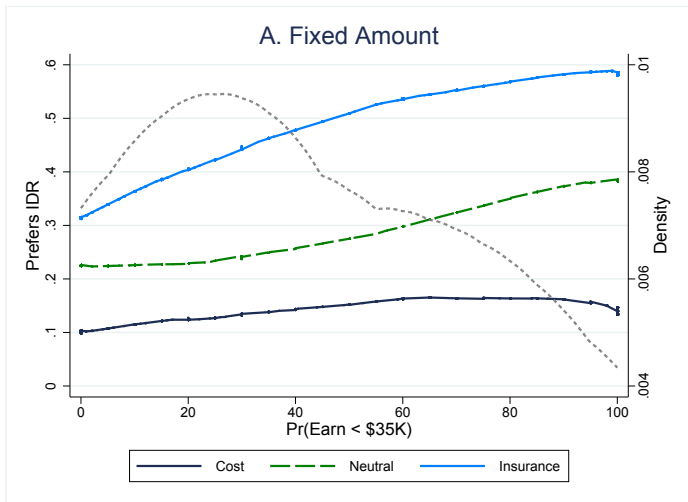
Share Choosing IDR

A. Fixed Amount

Share Choosing IDR

B. Fixed Length

Heterogeneous Effects of Framing

	(1) Fixed payment amount	(2) Fixed payment length
Cost framing	-0.147	-0.163
	(0.028)**	(0.025)**
Insurance framing	0.250	0.175
	(0.032)**	(0.032)**
STEM/business/economics		
× Interest framing	0.016	-0.013
	(0.026)	(0.020)
× Neutral framing	0.006	-0.093
	(0.032)	(0.029)**
× Insurance framing	-0.114	-0.087
	(0.034)**	(0.033)**
Test of eq. (p-value)	*0.003*	*0.015*
Observations	4,440	4,358

Heterogeneous Effects of Framing

Interaction term:	(1) More risk adverse		(2) Female	
	Fixed amount	Fixed length	Fixed amount	Fixed length
Cost framing	-0.076	-0.093	-0.096	-0.101
	(0.032)*	(0.025)**	(0.026)**	(0.021)**
Insurance framing	0.171	0.148	0.152	0.135
	(0.035)**	(0.032)**	(0.030)**	(0.027)**
Interaction term				
ˣ Interest framing	-0.063	-0.029	-0.022	-0.012
	(0.026)*	(0.019)	(0.024)	(0.017)
ˣ Neutral framing	0.032	-0.004	0.067	0.015
	(0.031)	(0.026)	(0.030)*	(0.026)
ˣ Insurance framing	0.075	0.075	0.132	0.104
	(0.034)*	(0.033)*	(0.032)**	(0.032)**
Test of eq. (p-value)	0.003	0.023	<0.001	0.005
Observations	4,058	3,958	4,440	4,358

Heterogeneous Effects of Framing

	(1) Fixed payment amount			(2) Fixed payment length		
Framing (rel. to neutral)						
Interest	-0.107			-0.016		
	(0.057)+			(0.062)		
Insurance	0.137			0.170		
	(0.067)*			(0.076)*		
Expected earnings ($\mu = 0$, $\sigma = 1$)	intercept	linear	quad	intercept	linear	quad
× Interest framing	0.0001	0.002	0.019	-0.0001	-0.001	-0.025
	(0.0005)	(0.002)	(0.039)	(0.0003)	(0.001)	(0.024)
× Neutral framing	0.00001	0.0002	0.003	0.0002	0.001	0.020
	(0.0004)	(0.003)	(0.057)	(0.001)	(0.002)	(0.046)
× Insurance framing	0.0004	-0.004	-0.035	0.0001	-0.002	-0.011
	(0.001)	(0.003)	(0.066)	(0.001)	(0.003)	(0.058)
Test of equality (p-value)	0.843	0.368	0.782	0.939	0.585	0.685
Probability of nonemployment	grad	age 30	age 40	grad	age 30	age 40
× Interest framing	0.058	0.166	-0.056	-0.025	-0.029	0.011
	(0.070)	(0.266)	(0.280)	(0.034)	(0.201)	(0.178)
× Neutral framing	0.210	0.500	-0.028	0.040	-0.173	0.489
	(0.075)**	(0.241)*	(0.225)	(0.074)	(0.317)	(0.360)
× Insurance framing	0.229	-0.468	0.232	0.079	0.177	-0.258
	(0.073)**	(0.315)	(0.288)	(0.070)	(0.253)	(0.170)
Test of equality (p-value)	0.176	0.051	0.724	0.344	0.669	0.148
Pr(earn 0-35K)	grad	age 30	age 40	grad	age 30	age 40
× Interest framing	0.002	0.043	0.079	-0.072	0.415	-0.371
	(0.051)	(0.156)	(0.186)	(0.044)+	(0.157)**	(0.165)*
× Neutral framing	0.057	0.057	-0.073	0.138	0.219	-0.018
	(0.066)	(0.066)	(0.225)	(0.065)*	(0.165)	(0.234)
× Insurance framing	0.268	0.256	-0.063	0.321	-0.111	0.370
	(0.070)**	(0.167)	(0.219)	(0.073)**	(0.150)	(0.215)+
Test of equality (p-value)	0.007	0.833	0.833	0.000	0.023	0.023
Observations	4,432			4,354		

Heterogeneous Effects of Framing

Interaction term:	(1) IDR rate		(2) Loan size	
	Fixed amt.	Fixed len.	Fixed amt.	Fixed len.
Framing (rel. to neutral)				
Cost	-0.249	-0.191	-0.007	-0.086
	(0.070)**	(0.039)**	(0.057)	(0.045)+
Insurance	0.171	0.233	0.286	0.182
	(0.076)*	(0.048)**	(0.067)**	(0.062)**
Interaction term:				
ˣ Cost framing	-0.007	-0.005	0.008	0.022
	(0.002)**	(0.003)*	(0.008)	(0.005)**
ˣ Neutral framing	-0.013	-0.015	0.038	0.028
	(0.003)**	(0.003)**	(0.010)**	(0.008)**
ˣ Insurance framing	-0.013	-0.021	0.015	0.028
	(0.003)**	(0.004)**	(0.011)	(0.010)**
Test of equality (p-value)	0.191	0.001	0.054	0.763
Observations	4,440	4,358	4,440	4,358

Heterogeneous Effects of Framing

	(1) Fixed payment amount	(2) Fixed payment length
Framing (rel. to neutral)		
Interest	-0.101	-0.053
	(0.028)**	(0.021)*
Insurance	0.132	0.134
	(0.033)**	(0.029)**
Pr(earnings = $0)		
× Interest framing	0.091	-0.002
	(0.064)	(0.034)
× Neutral framing	0.256	0.096
	(0.072)**	(0.065)
× Insurance framing	0.222	0.110
	(0.068)**	(0.067)
Test of equality (p-value)	*0.179*	*0.188*
Pr(earnings > $0, ≤ $35k)		
× Interest framing	0.018	-0.027
	(0.043)	(0.035)
× Neutral framing	0.066	0.165
	(0.057)	(0.055)**
× Insurance framing	0.286	0.332
	(0.060)**	(0.061)**
Test of equality (p-value)	*0.001*	*<0.001*
Observations	4,440	4,358

Heterogeneous Effects of Framing

Interaction term:	(1) Low financial literacy		(2) Has UMD loan		(3) Underrepresented minority		(4) First generation college student	
	Fixed amt.	Fixed len.	Fixed amt.	Fixed len.	Fixed amt.	Fixed len.	Fixed amt.	Fixed len.
Cost framing	-0.121	-0.107	-0.143	-0.085	-0.141	-0.104	-0.131	-0.112
	(0.026)**	(0.020)**	(0.026)**	(0.020)**	(0.021)**	(0.017)**	(0.021)**	(0.017)**
Insurance framing	0.173	0.156	0.194	0.179	0.162	0.179	0.178	0.170
	(0.030)**	(0.027)**	(0.031)**	(0.028)**	(0.025)**	(0.023)**	(0.025)**	(0.023)**
Interaction term								
ˣ Interest framing	-0.048	-0.015	0.024	0.017	-0.004	0.003	-0.030	0.014
	(0.023)*	(0.018)	(0.023)	(0.017)	(0.029)	(0.023)	(0.027)	(0.023)
ˣ Neutral framing	-0.003	0.004	0.019	0.078	-0.005	0.054	0.012	0.026
	(0.030)	(0.027)	(0.030)	(0.025)**	(0.036)	(0.033)+	(0.036)	(0.032)
ˣ Insurance framing	0.022	0.058	0.001	0.076	0.097	0.053	0.041	0.064
	(0.032)	(0.032)+	(0.032)	(0.031)*	(0.039)*	(0.038)	(0.038)	(0.038)+
Test of eq. (p-value)	0.169	0.125	0.841	0.064	0.069	0.288	0.260	0.506
Observations	4,440	4,358	4,440	4,358	4,440	4,358	4,440	4,358

Selection into Analysis Sample

	(1) Analysis sample	(2) Other students	(3) Pr(analysis sample)
Demographic characteristics			
Age	20.1	20.5	-0.009
			(0.001)**
Female	0.50	0.45	0.026
			(0.005)**
Race (relative to white)			
Asian	0.20	0.16	0.017
			(0.007)*
Black	0.13	0.13	-0.021
			(0.008)**
Hispanic	0.10	0.10	-0.005
			(0.008)
Other/multi	0.06	0.06	0.001
			(0.010)
Class standing (rel. to freshmen)			
New transfer	0.08	0.07	0.021
			(0.012)+
Sophomore	0.16	0.18	-0.030
			(0.008)**
* GPA ($\mu = 0$)	0.01	-0.002	0.032
			(0.009)**
Junior	0.24	0.26	-0.024
			(0.008)**
* GPA ($\mu = 0$)	0.01	-0.002	0.025
			(0.008)**
Senior	0.32	0.31	-0.006
			(0.008)
* GPA ($\mu = 0$)	0.03	-0.01	0.063
			(0.009)**
STEM/business/econ major	0.56	0.50	0.035
			(0.006)**
Undecided major	0.10	0.12	-0.010
			(0.008)
Nonmissing SAT scores	0.87	0.86	-0.035
			(0.015)*
* SAT math percentile (0-100)	71.5	70.2	0.0003
			(0.0002)
First generation student	0.24	0.21	0.014
			(0.007)*
Maryland resident	0.83	0.78	0.041
			(0.006)**
Financial aid			
FAFSA submitted in 2015-16	0.88	0.81	0.037
			(0.007)**
* 2015-16 EFC ($1k)	$17.7	$17.3	-0.0001
			(0.0001)
Any UMD loans?	0.50	0.42	0.030
			(0.007)**
Cumulative loans ($1k)	$9.0	$7.6	0.001
			(0.0002)**
Cumulative grants ($1k)	$6.7	$5.2	0.001
			(0.0003)**
Students	4,399	21,036	25,435

Predetermined Characteristics Uncorrelated with Treatment Parameters

Dependent variable:	(1) STEM major	(2) Other major	(3) Female	(4) SAT percentile	(5) Missing SAT	(6) Fresh.	(7) Soph.	(8) Junior	(9) Senior
Sample mean	0.559	0.337	0.497	82.5	0.133	0.193	0.163	0.244	0.318
Fixed payment length	0.022	-0.010	0.018	0.1	-0.013	-0.013	0.015	-0.016	0.006
	(0.015)	(0.014)	(0.015)	(0.6)	(0.010)	(0.012)	(0.011)	(0.013)	(0.014)
Framing (rel. to neutral)									
Cost	0.026	-0.004	0.036	0.7	-0.008	0.004	-0.001	-0.015	0.006
	(0.018)	(0.018)	(0.019)+	(0.7)	(0.013)	(0.015)	(0.014)	(0.016)	(0.017)
Insurance	-0.007	0.017	0.014	1.5	-0.012	-0.004	0.012	0.003	0.000
	(0.018)	(0.017)	(0.018)	(0.7)*	(0.012)	(0.014)	(0.014)	(0.016)	(0.017)
Low payment in 1st scenario	-0.020	0.001	0.017	-0.6	0.009	0.005	0.002	0.011	-0.016
	(0.015)	(0.014)	(0.015)	(0.6)	(0.010)	(0.012)	(0.011)	(0.013)	(0.014)
Loan amount = $60,000	0.003	-0.007	-0.002	0.8	-0.006	-0.003	0.012	-0.005	-0.001
	(0.015)	(0.014)	(0.015)	(0.6)	(0.010)	(0.012)	(0.011)	(0.013)	(0.014)
Test of joint sig. (*p*-val.)	0.182	0.788	0.232	0.162	0.627	0.886	0.509	0.549	0.910

Predetermined Characteristics Uncorrelated with Treatment Parameters

Dependent variable:	(1) Age	(2) Asian	(3) URM	(4) White	(5) GPA	(6) First gen. student	(7) MD resident	(8) FAFSA submitted	(9) EFC ($1k)	(10) Any UMD loans	(11) Cum. grants ($1k)	(12) Cum. loans ($1k)
Sample mean	20.11	0.201	0.226	0.515	3.24	0.240	0.830	0.876	20.3	0.496	6.7	9.0
Fixed payment length	0.01	-0.016	0.009	0.005	-0.01	0.006	0.015	0.011	0.5	0.007	-0.1	-0.3
	(0.06)	(0.012)	(0.013)	(0.015)	(0.02)	(0.013)	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)
Framing (rel. to neutral)												
Cost	-0.01	0.022	-0.014	-0.011	0.04	-0.012	-0.011	-0.025	0.5	-0.033	-0.2	-1.1
	(0.07)	(0.015)	(0.016)	(0.019)	(0.02)+	(0.016)	(0.014)	(0.012)*	(0.9)	(0.019)+	(0.5)	(0.6)+
Insurance	-0.04	0.008	-0.004	-0.015	0.02	-0.002	-0.034	-0.017	-0.4	-0.015	0.3	-0.9
	(0.07)	(0.015)	(0.015)	(0.018)	(0.02)	(0.016)	(0.014)*	(0.012)	(0.9)	(0.018)	(0.5)	(0.6)
Low payment in 1st scenario	0.03	-0.011	0.027	-0.018	0.0001	0.024	-0.010	-0.004	0.1	0.012	0.1	1.0
	(0.06)	(0.012)	(0.013)*	(0.015)	(0.02)	(0.013)+	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)*
Loan amount = $60,000	-0.04	-0.008	-0.013	0.022	0.003	-0.011	0.010	-0.006	0.3	0.003	-0.4	-0.2
	(0.06)	(0.012)	(0.013)	(0.015)	(0.02)	(0.013)	(0.011)	(0.010)	(0.7)	(0.015)	(0.4)	(0.5)
Test of joint sig. (p-val.)	0.951	0.382	0.218	0.516	0.701	0.456	0.092	0.269	0.865	0.555	0.775	0.144

Correlates of Expected Earnings

	Expected (conditional) earnings ($1k) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population (conditional) earnings ($1k) at:			
Graduation	0.85	0.40	0.15
	(0.10)**	(0.21)+	(0.30)
Age 30	0.20	0.04	0.22
	(0.10)*	(0.22)	(0.31)
Age 40	-0.10	0.28	0.40
	(0.04)*	(0.08)**	(0.11)**
Female	-2.03	-15.22	-25.79
	(1.19)+	(2.26)**	(3.03)**
Underrepresented minority	2.49	4.88	7.59
	(1.48)+	(2.53)+	(3.48)*
First generation student	-0.26	-7.46	-9.09
	(1.30)	(2.26)**	(3.31)**
Age	-0.43	-4.36	-4.18
	(0.53)	(0.90)**	(1.28)**
In-state student	-0.29	-7.69	-12.98
	(1.20)	(2.70)**	(3.87)**

Notes: Students with undecided majors are excluded.

Other Correlates of Expected Earnings

	Expected (conditional) earnings ($1k) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Class standing (rel. to freshman)			
New transfer	3.13	8.21	4.25
	(2.62)	(5.10)	(6.94)
Sophomore	11.90	18.09	20.19
	(5.34)*	(9.81)+	(13.36)
Junior	8.81	16.84	13.52
	(5.48)	(10.27)	(13.58)
Senior	6.37	27.52	32.01
	(5.84)	(11.07)*	(14.70)*
SAT percentile	1.04	-6.18	-6.30
	(4.20)	(7.95)	(10.33)
Sophomore, junior, senior			
×GPA	-3.04	-4.30	-4.10
	(1.51)*	(2.78)	(3.74)
Parent income ($1k)	-0.002	0.02	0.03
	(0.01)	(0.01)+	(0.02)
Student income ($10k)	0.25	0.24	0.53
	(0.15)+	(0.15)	(0.33)
More risk averse	-2.77	-12.04	-20.60
	(1.08)*	(2.02)**	(2.84)**
Financially literate	-0.16	-3.43	-4.30
	(1.05)	(2.04)+	(2.78)
Very likely to attend grad school	-2.59	11.94	16.30
	(1.14)*	(1.96)**	(2.75)**
Observations	3,945	3,945	3,945

Correlates of Expected Pr($0 Earnings)

	Expected Pr($0 earnings) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population Pr($0 earnings) at:			
Graduation	0.294	-0.068	-0.033
	(0.136)*	(0.054)	(0.055)
Age 30	0.538	0.233	0.179
	(0.268)*	(0.107)*	(0.113)
Age 40	-0.149	0.202	0.279
	(0.330)	(0.144)	(0.140)*
Female	0.033	0.005	0.007
	(0.008)**	(0.003)	(0.003)*
Underrepresented minority	0.001	-0.001	-0.003
	(0.009)	(0.004)	(0.004)
First generation student	0.003	0.004	-0.001
	(0.009)	(0.004)	(0.004)
Age	0.006	0.008	0.003
	(0.003)+	(0.002)**	(0.002)+
In-state student	0.025	0.007	0.005
	(0.009)**	(0.003)*	(0.003)+

Notes: Students with undecided majors are excluded.

Other Correlates of Expected Pr($0 Earnings)

	Expected Pr($0 earnings) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Class standing (rel. to freshman)			
New transfer	0.029	0.012	-0.003
	(0.017)+	(0.009)	(0.007)
Sophomore	0.012	-0.007	-0.016
	(0.032)	(0.013)	(0.013)
Junior	0.016	-0.011	-0.015
	(0.031)	(0.013)	(0.013)
Senior	0.019	-0.016	-0.019
	(0.032)	(0.014)	(0.013)
SAT percentile	0.029	0.002	-0.010
	(0.029)	(0.012)	(0.011)
Sophomore, junior, senior			
$^\times$GPA	0.001	0.003	0.004
	(0.009)	(0.004)	(0.004)
Parent income ($1k)	-0.00002	-0.00002	-0.00002
	(0.00001)	(0.00001)	(0.00001)
Student income ($10k)	-0.0005	0.0001	-0.0004
	(0.0005)	(0.0004)	(0.0003)
More risk averse	0.027	0.005	0.001
	(0.007)**	(0.003)+	(0.003)
Financially literate	-0.022	0.001	0.004
	(0.008)**	(0.003)	(0.003)
Very likely to attend grad school	0.056	-0.005	-0.012
	(0.008)**	(0.003)	(0.003)**
Observations	3,945	3,945	3,945

Correlates of Expected Pr(Low Earnings)

	Expected Pr(earnings in ($0, $35k]) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Population Pr(earnings in ($0,$35k]) at:			
Graduation	0.647	0.115	0.073
	(0.046)**	(0.026)**	(0.020)**
Age 30	0.059	0.278	0.149
	(0.134)	(0.077)**	(0.059)*
Age 40	-0.001	-0.043	0.020
	(0.155)	(0.086)	(0.062)
Female	0.027	0.011	0.009
	(0.009)**	(0.005)*	(0.004)*
Underrepresented minority	0.002	0.003	-0.002
	(0.011)	(0.006)	(0.005)
First generation student	0.012	0.010	0.009
	(0.010)	(0.006)	(0.005)*
Age	0.002	0.015	0.008
	(0.004)	(0.003)**	(0.002)**
In-state student	0.019	0.017	0.013
	(0.010)+	(0.005)**	(0.004)**

Notes: Students with undecided majors are excluded.

Other Correlates of Expected Pr(Low Earnings)

	Expected Pr(earnings in ($0, $35k]) at:		
	(1) Graduation	(2) Age 30	(3) Age 40
Class standing (rel. to freshman)			
New transfer	0.009	-0.023	-0.011
	(0.020)	(0.013)+	(0.010)
Sophomore	0.104	-0.031	-0.024
	(0.036)**	(0.021)	(0.016)
Junior	0.122	-0.047	-0.030
	(0.037)**	(0.022)*	(0.017)+
Senior	0.136	-0.072	-0.052
	(0.039)**	(0.024)**	(0.018)**
SAT percentile	0.054	0.043	0.012
	(0.032)+	(0.020)*	(0.015)
Sophomore, junior, senior			
×GPA	-0.036	0.003	0.002
	(0.010)**	(0.006)	(0.004)
Parent income ($1k)	-0.00002	-0.0001	-0.00003
	(0.00005)	(0.00003)**	(0.00002)
Student income ($10k)	-0.002	-0.000	-0.000
	(0.001)**	(0.001)	(0.000)
More risk averse	0.029	0.015	0.012
	(0.008)**	(0.004)**	(0.003)**
Financially literate	0.004	-0.003	-0.002
	(0.008)	(0.005)	(0.004)
Very likely to attend grad school	0.013	-0.023	-0.025
	(0.008)	(0.005)**	(0.004)**
Observations	3,945	3,945	3,945

Fixed Amount IDR Take-up by IDR Rate and Frame
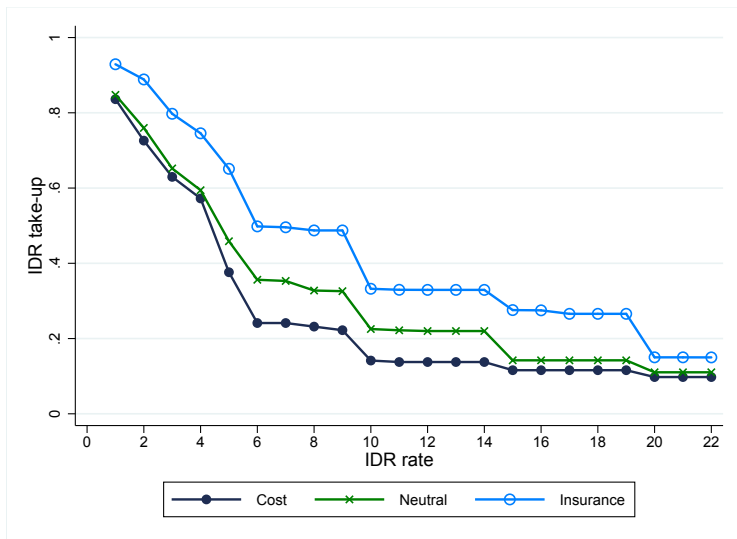
Notes: Students who stated they would be indifferent between IDR and the standard repayment plan at a specific rate are assumed to choose the standard plan.

Selection into Fixed Length IDR
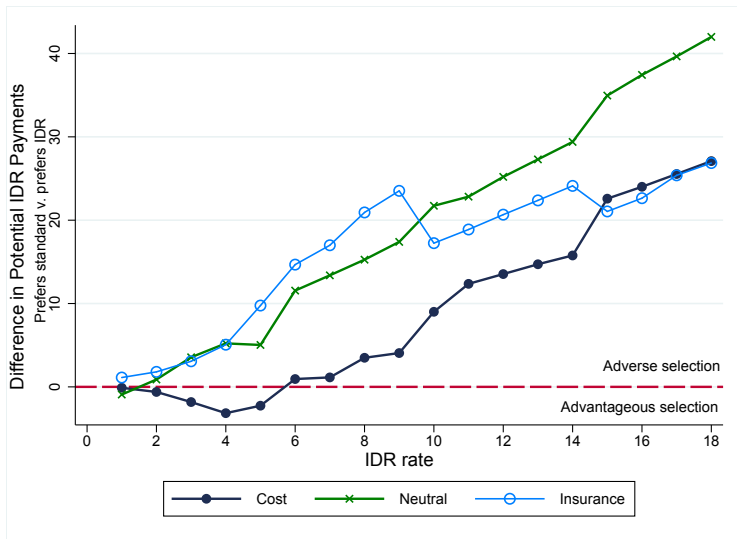
Notes: 5% interest rate for standard plan. 3% discount rate. Totals over 20 years after leaving school. Difference in revenue ($1k) collected under IDR per $45K loan between students that choose the standard plan and students that choose IDR.

Share of Loans Ever Defaulting
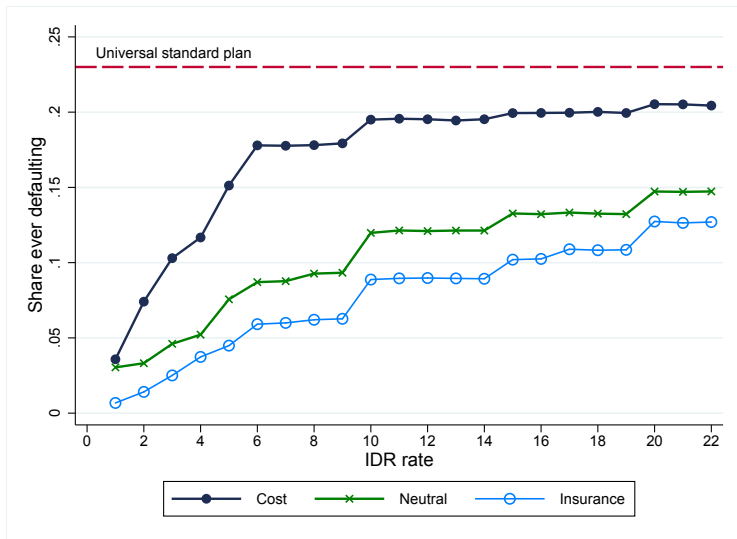
Notes: Probability that required loan payment given plan choice > 50% of income for 2 consecutive years over 20 years after leaving school. Students choosing IDR are assumed to never default.

PDV of Payments per $45k Loan
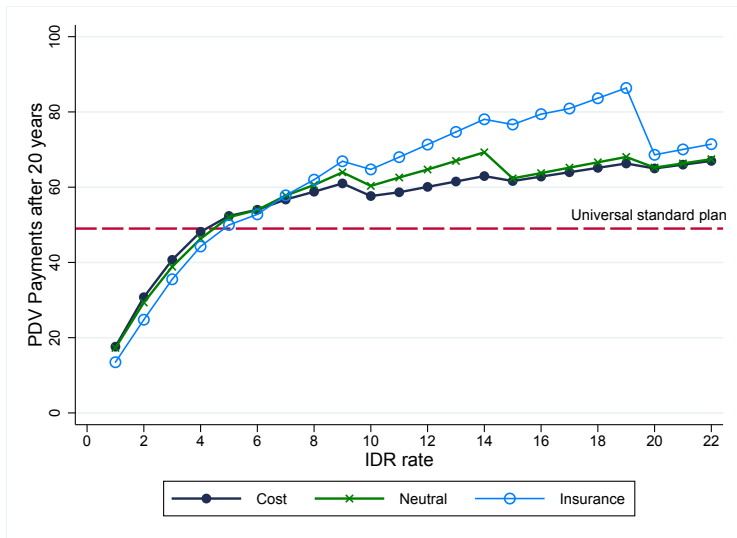
Generating Weights

Generate weights via raking

Generating Weights

Generate weights via raking

Cell counts from 2012 NPSAS

- ▶ BA-degree seeking borrowers attending public/nonprofit institutions
- ▶ N = 4.6m

Generating Weights

Generate weights via raking

Cell counts from 2012 NPSAS

- ► BA-degree seeking borrowers attending public/nonprofit institutions
- ► N = 4.6m

Matched on gender, race, major, age, financial need (EFC = 0, Pell Grant eligible), first generation student, in-state student, missing SAT scores, junior/senior

Generating Weights

Generate weights via raking

Cell counts from 2012 NPSAS

- ▶ BA-degree seeking borrowers attending public/nonprofit institutions
- ▶ N = 4.6m

Matched on gender, race, major, age, financial need (EFC = 0, Pell Grant eligible), first generation student, in-state student, missing SAT scores, junior/senior

Weights constrained to be in $[1, 8000]$

[Back]

From Fishman and Love (2015) report, "Understanding Student Loan Debt"

…when we explained [IDR] to students in our focus group, they expressed reservations about the plan…. They didn't like the trade-off of repaying their loans for up to 20-25 years, even if they only had to pay a small percentage of their income each month…

Female: "25 years, though?"

Male: "That's a long time."

Randall: "That's murder. Murder is like 25 to life."

Ann (moderator): "So, you see it as a prison sentence?"

Randall: "I'm just saying that's a long time."

Sample means

	UMD		NPSAS
	Unweighted	Weighted	
Age > 19	0.59	0.74	0.74
First generation student	0.22	0.30	0.30
In-state student	0.82	0.76	0.76
EFC = 0	0.17	0.33	0.33
Pell Grant eligible	0.36	0.57	0.57
Female	0.48	0.57	0.57
Class standing = junior or senior	0.59	0.59	0.59
Race			
Asian	0.19	0.05	0.05
Black	0.11	0.17	0.17
Hispanic	0.09	0.13	0.13
White	0.55	0.61	0.61
Missing SAT scores	0.11	0.19	0.19
Major			
Science, math, health	0.18	0.21	0.21
Business and economics	0.13	0.19	0.19
Computer/information sciences	0.09	0.04	0.04
Education	0.04	0.07	0.07
Engineering	0.18	0.05	0.05
General studies	0.01	0.03	0.03
Humanities	0.05	0.10	0.10
Other applied fields	0.10	0.17	0.17
Social sciences	0.10	0.11	0.11
Undecided	0.10	0.02	0.02

Sample means: other characteristics

	UMD		NPSAS
	Unweighted	Weighted	
Age	20.0	20.6	23.5
Outstanding student loan debt	$9,425	$10,140	$22,875
Unmet need	$2,534	$2,858	$12,740
Parent income[1]	$114,551	$82,444	$80,338
Student income	$922	$1,491	$9,158
Current year loans	$3,923	$4,135	$7,674
Current year grants	$2,380	$3,134	$7,447
Expected family contribution	$18,857	$12,477	$8,903
SAT score[1]	1157	1084	1019

Notes: 1. limited to students with nonmissing parental income/SAT scores.
[Back]

Effect of Framing on Willingness to Pay for IDR

	(1) Fixed payment amount	(2) Fixed payment length
Mean / neutral framing	*15.66*	*7.15*
Framing (rel. to neutral)		
Cost	-3.77	-2.07
	(0.76)**	(0.43)**
Insurance	5.82	4.08
	(0.88)**	(0.66)**
Test of eq. (p-val)	*<0.001*	*<0.001*
Loan size ($10k)	0.76	0.69
	(0.23)**	(0.16)**
Number of students	1,283	1,248

Notes: Dependent variable = payments under IDR as a percent of monthly earnings that would make respondent indifferent between IDR and standard repayment plan. Students reporting willingness to pay that conflicts with earlier answers or a payment equal to 0 or 100 percent are excluded. Robust standard errors in parentheses; ** $p<0.01$, * $p<0.05$, + $p<0.1$.

Expected vs Actual Earnings, ACS Broad Majors
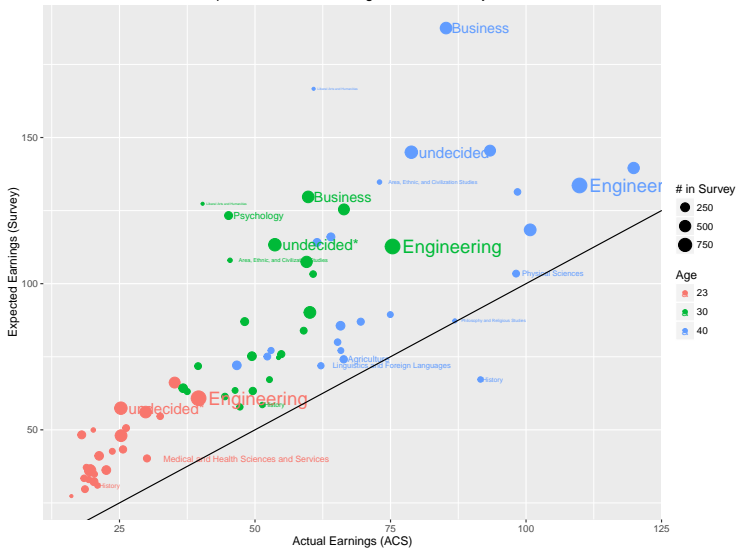
Hypothetical Repayment Plans: Fixed Length IDR

Plan A	Plan B
• You will pay back the money you owe over the next 10 years.	• Your student loan debt will be replaced with a contract requiring you to make monthly payments over the next 20 years. Regardless of how much you end up paying, you will be required to make payments for the full 20-year period.
• You will make a fixed monthly payment of $636 per month, which will cover both the interest that you owe (calculated at 5% per year) and your loan principal.	• You will not make payments in any month in which your income is less than $1,000 (in 2016 dollars). • In months when your income exceeds $1,000, your payments will equal 10% of the amount you earn above $1,000.

Fixed Length IDR: "Cost" Frame

• With this plan, you know exactly how much you will have to pay each month for the next 10 years. Over the life of the loan, in addition to repaying the amount you borrowed, you will pay a total of $8,184 in interest.	• With this plan, you could end up paying substantially more over the 20-year duration of the contract than you would pay under Plan A and you will be required to make payments for a longer period of time.

Expected Labor Market Outcomes and IDR Take-up

	(1) Fixed amount	(2) Fixed length
Expected earnings | employment ($10k)		
At graduation	0.002	0.002
	(0.003)	(0.003)
Age 30	-0.002	-0.000
	(0.002)	(0.002)
Age 40	0.001	-0.001
	(0.002)	(0.001)
Framing (rel. to neutral)		
Cost	-0.138	-0.116
	(0.019)**	(0.015)**
Insurance	0.187	0.180
	(0.022)**	(0.020)**
Loan size ($10k)	0.020	0.025
	(0.006)**	(0.005)**
Payment as % of income	-0.011	-0.014
	(0.002)**	(0.002)**

Robustness of Correlations between Expected Labor Market Outcomes and IDR Take-up

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(9)	(10)	(11)
Expected earnings										
At graduation	0.007	-0.002	0.002	0.0004	-0.001	0.007	-0.0004	0.002	-0.003	-0.002
	(0.009)	(0.002)	(0.003)	(0.004)	(0.005)	(0.010)	(0.005)	(0.003)	(0.004)	(0.004)
Age 30	-0.011	-0.000	-0.0001	-0.001	0.002	-0.001	-0.0001	-0.002	0.001	-0.0001
	(0.015)	(0.002)	(0.003)	(0.003)	(0.004)	(0.011)	(0.002)	(0.002)	(0.003)	(0.003)
Age 40	0.005	-0.000	-0.0002	-0.0004	-0.002	-0.006	-0.0004	0.0003	-0.001	-0.0003
	(0.014)	(0.001)	(0.002)	(0.002)	(0.002)	(0.012)	(0.001)	(0.001)	(0.002)	(0.002)
Probability of $0 earnings										
At graduation	0.170	0.158	0.165	0.203	0.232	0.039	0.035	0.0003	0.081	0.054
	(0.043)**	(0.045)**	(0.046)**	(0.065)**	(0.070)**	(0.035)	(0.043)	(0.037)	(0.050)	(0.057)
Age 30	0.075	0.102	0.044	0.161	0.008	0.038	0.051	0.214	0.067	0.144
	(0.174)	(0.175)	(0.178)	(0.219)	(0.240)	(0.143)	(0.142)	(0.138)	(0.166)	(0.179)
Age 40	-0.003	-0.012	0.033	0.017	0.128	-0.058	-0.064	-0.204	-0.092	-0.188
	(0.162)	(0.164)	(0.168)	(0.195)	(0.212)	(0.125)	(0.126)	(0.111)+	(0.125)	(0.136)
Probability of earnings < $35,000										
At graduation	0.111	0.090	0.138	0.111	0.140	0.134	0.121	0.146	0.113	0.121
	(0.038)**	(0.037)*	(0.042)**	(0.044)*	(0.049)**	(0.037)**	(0.041)**	(0.040)**	(0.042)**	(0.046)**
Age 30	0.132	0.140	0.108	0.119	0.085	0.144	0.149	0.111	0.132	0.149
	(0.098)	(0.098)	(0.105)	(0.103)	(0.112)	(0.096)	(0.095)	(0.102)	(0.109)	(0.119)
Age 40	-0.017	-0.027	0.010	-0.036	0.009	0.027	0.027	0.043	0.027	0.003
	(0.124)	(0.124)	(0.138)	(0.132)	(0.148)	(0.127)	(0.127)	(0.139)	(0.139)	(0.152)
Observations	4,440	4,440	3,844	4,058	3,518	4,358	4,358	3,762	3,972	3,460
Specification:										
Standardized earnings ($\mu=0$, $\sigma=1$)	X					X				
Unconditional earnings ($10k)		X					X			
Earnings | employment ($10k)			X	X	X			X	X	X
Sample restrictions:										
At least 5 minutes on survey			X		X			X		X
Dropping outliers				X	X				X	X

Expected Labor Market Outcomes and IDR Take-up

	(1) Fixed amount	(2) Fixed length
Probability of $0 earnings		
At graduation	0.170	0.039
	(0.043)**	(0.035)
Age 30	0.075	0.038
	(0.174)	(0.143)
Age 40	-0.003	-0.058
	(0.162)	(0.125)
Probability of earnings in ($0, $35k]		
At graduation	0.111	0.134
	(0.038)**	(0.037)**
Age 30	0.132	0.144
	(0.098)	(0.096)
Age 40	-0.017	0.027
	(0.124)	(0.127)
Observations	4,440	4,358

PDV of Payments at 10 Years
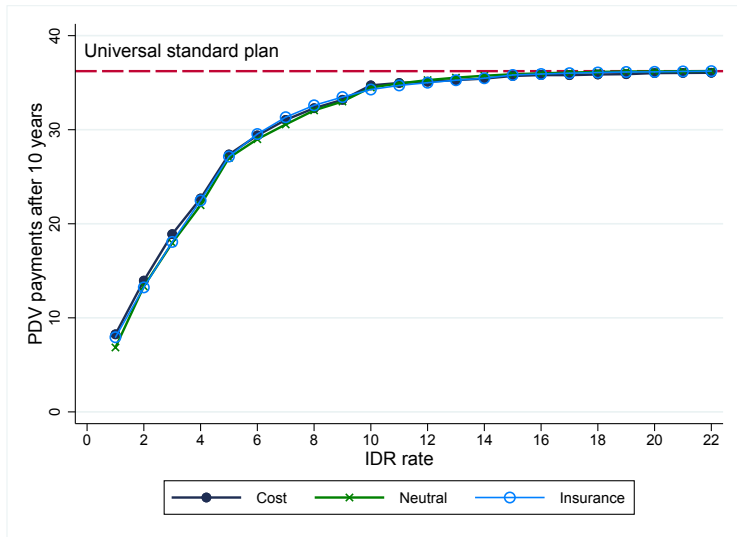
Willingness to Pay for IDR by Pr. Low Earnings

A. Fixed Amount IDR

Willingness to Pay for IDR by Pr. Low Earnings

B. Fixed Length IDR
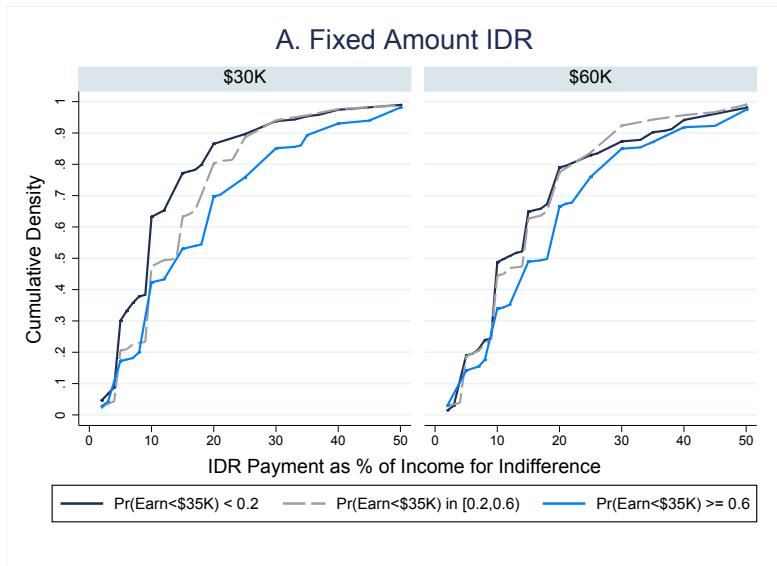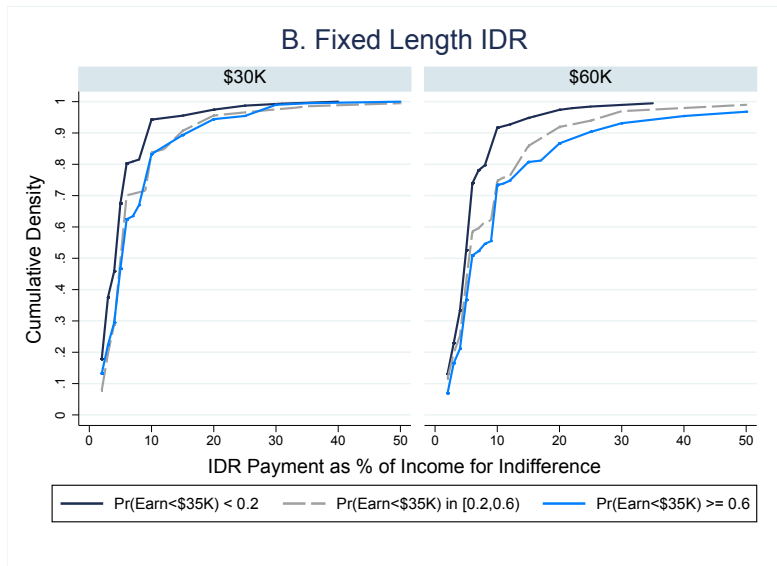
Exit Counseling

	Initial Monthly Payment	Total Amount Paid	Repayment Period	
⊙ Standard	$ 318	$38,184	10 years	See Payment Guidelines
○ Graduated	$ 180	$40,294	10 years	See Payment Guidelines
○ Extended, Fixed	Extended only available for amounts greater than $30,000.	Extended only available for amounts greater than $30,000.	25 years	See Payment Guidelines
○ Extended, Graduated	Extended only available for amounts greater than $30,000.	Extended only available for amounts greater than $30,000.	25 years	See Payment Guidelines
○ Revised Pay As You Earn	$ 98	$52,604	20 years	See Payment Guidelines
○ Pay As You Earn	$ 98	$51,289	20 years	See Payment Guidelines
○ Income-Based Repayment	$ 147	$44,944	25 years	See Payment Guidelines
○ IBR for New Borrowers	$ 98	$51,289	20 years	See Payment Guidelines
○ Income-Contingent Repayment	$ 203	$44,656	25 years	See Payment Guidelines

Pay it Forward Legislation
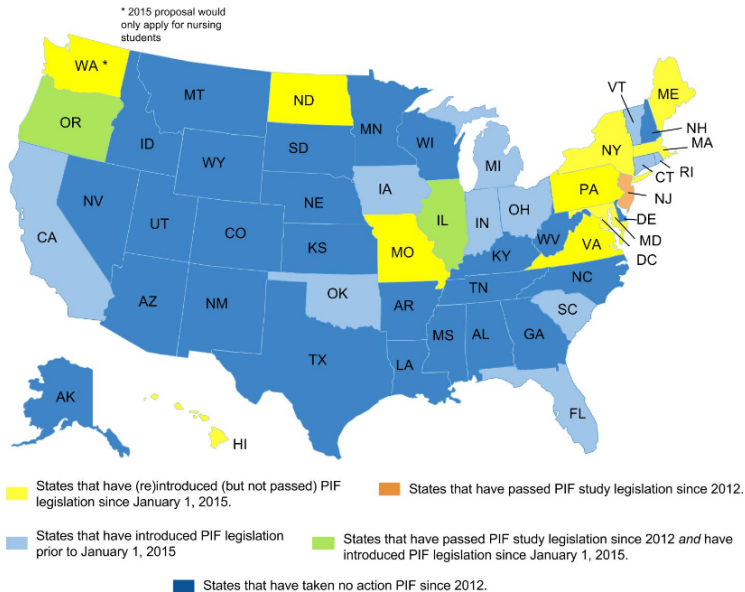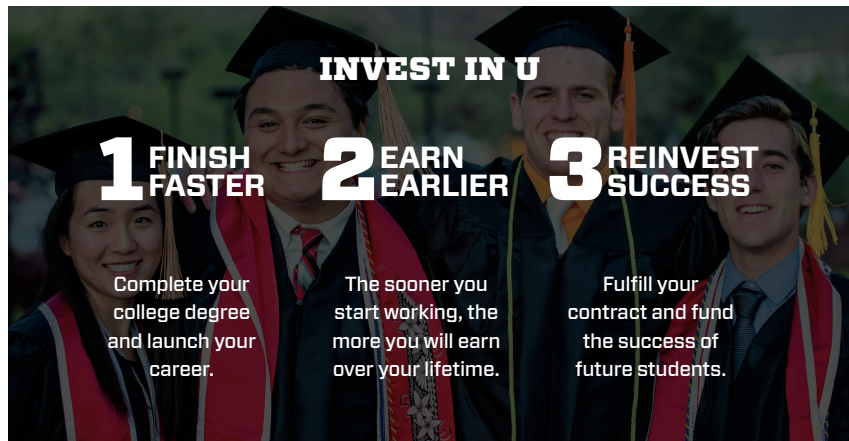
* 2015 proposal would only apply for nursing students

States that have (re)introduced (but not passed) PIF legislation since January 1, 2015.

States that have passed PIF study legislation since 2012.

States that have introduced PIF legislation prior to January 1, 2015

States that have passed PIF study legislation since 2012 *and* have introduced PIF legislation since January 1, 2015.

States that have taken no action PIF since 2012.

Fixed length IDR: University of Utah

DL Borrowers/Balances in IDR