



November 2018

Student Loan Bill of Rights: *Student Loan Refinancing*

The 2018 Washington State Legislature directed the Washington State Institute for Public Policy (WSIPP) to “conduct a study on student loan authorities that refinance existing federal and private undergraduate and graduate student loans from the proceeds of tax-exempt bonds.”¹

This study fulfills this assignment in two ways. It reviews what Washington can learn about setting up a student loan refinancing program from other state programs, policy experts, and the academic literature. We also estimate what Washington borrowers would likely gain or lose if they could refinance with a state program.

This report is organized as follows:

Section I provides background information on the history and types of student loans, student loan debt in Washington State, and student loan refinancing;

Section II describes the structure and characteristics of other state refinancing programs;

Section III estimates the possible savings from a potential Washington State refinancing program for different student groups;

Section IV considers the value of the benefits lost by individuals who refinance federal student loans; and

Section V summarizes the findings and considers the limitations of the report.

Summary of Findings

The 2018 Washington State Legislature directed WSIPP to study student loan refinancing.

We reviewed 15 other state refinancing programs and found that refinancing programs do not vary widely between states due to broader market factors. Typically, states offering student loan refinancing have existing direct student loan programs, unlike Washington. Through interviews, we identified key considerations for developing a state refinancing program including funding, structure, market demand, and product development.

We then analyzed how Washington students could benefit from a hypothetical state refinancing program, compared to federal standard repayment plans. We also calculated the value of federal income-driven repayment plans and loan forgiveness for undergraduate and graduate students. Given available data, we focused on the consequences of refinancing federal student loans.

We found that high-income, high-debt professional and graduate students would benefit the most from refinancing when considering both standard and alternative federal loan repayment options; 4-year undergraduates would benefit only under some loan terms; and 2-year undergraduates would rarely benefit.

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¹ Engrossed Second Substitute Senate Bill 6029, Chapter 62, Laws of 2018.

I. Background

This study is focused on the refinancing of student loans. When a borrower refinances his or her student loans, the lender buys the existing loan(s) and issues a new loan. Refinancing allows borrowers to alter the conditions of their student loans, including the interest rate, the monthly payments, and the repayment schedule. Borrowers can refinance their loans at any point—immediately at repayment or in the middle of the repayment schedule.

This section includes a discussion of student loan debt, an overview of student loan types, and background information on student loan refinancing.

Student Loan Debt

Total student loan debt in America has more than doubled in the past 20 years.² Unlike grants or scholarships, loans must be paid back. The increase in student loan debt stems from both a greater number of students receiving loans and a larger average loan amount. In 1989, about 50% of senior undergraduates had student loans with an average total debt of about \$15,400 (in 2016 dollars). By 2011, about 68% of senior undergraduates had loans with an average total debt of \$26,600 (in 2016 dollars).³

² College Board. See Figure 6. [Trends in Higher Education](#).

³ National Center for Education Statistics. (2016). See [table 331.95](#)—Percentage of undergraduate students ages 18 to 24 in their 4th (senior) year or above who ever received federal loans, nonfederal loans, or Parent Loans for Undergraduate Students (PLUS), and average cumulative amount borrowed, by selected student characteristics and control and level of institution: 1989-90, 1999-2000, and 2011-12.

Legislative Assignment

The Washington state institute for public policy shall conduct a study on student loan authorities that refinance existing federal and private undergraduate and graduate student loans from the proceeds of tax-exempt bonds. In conducting the study, the institute shall:

- (a) Review guidance on the subject issued by the United States treasury;*
- (b) Review the structure and characteristics of state-operated loan refinance programs in other states, including borrower requirements;*
- (c) Review available literature on the impacts of borrower requirements of similar programs;*
- (d) Estimate potential savings and costs to undergraduate and graduate borrowers from differences in interest rates of loans refinanced by the state as compared to similarly situated borrowers of federal direct loans and private loans, issued one, five, and ten years ago; and*
- (e) Consider the value of repayment and forgiveness options that may be lost to a borrower of a federal student education loan who chooses to refinance, including income-driven repayment options, economic hardship deferments, or public service loan forgiveness.*

The Washington state institute for public policy shall submit a report on its findings to the higher education committees of the legislature by December 31, 2018.

Engrossed Second Substitute Senate Bill 6029,
Chapter 62, Laws of 2018

According to the Consumer Financial Protection Bureau, Washington State ranks 23rd in the level of total student loan debt for college graduates.⁴ Nearly 12% of all Washington students take on some sort of federal student loans—the most common type of student loan.

The average debt amount varies according to the type of school and student, with undergraduates at 2- or 4-year schools

owing significantly less than graduate and professional students (i.e., those pursuing professional degrees like medicine or law.)

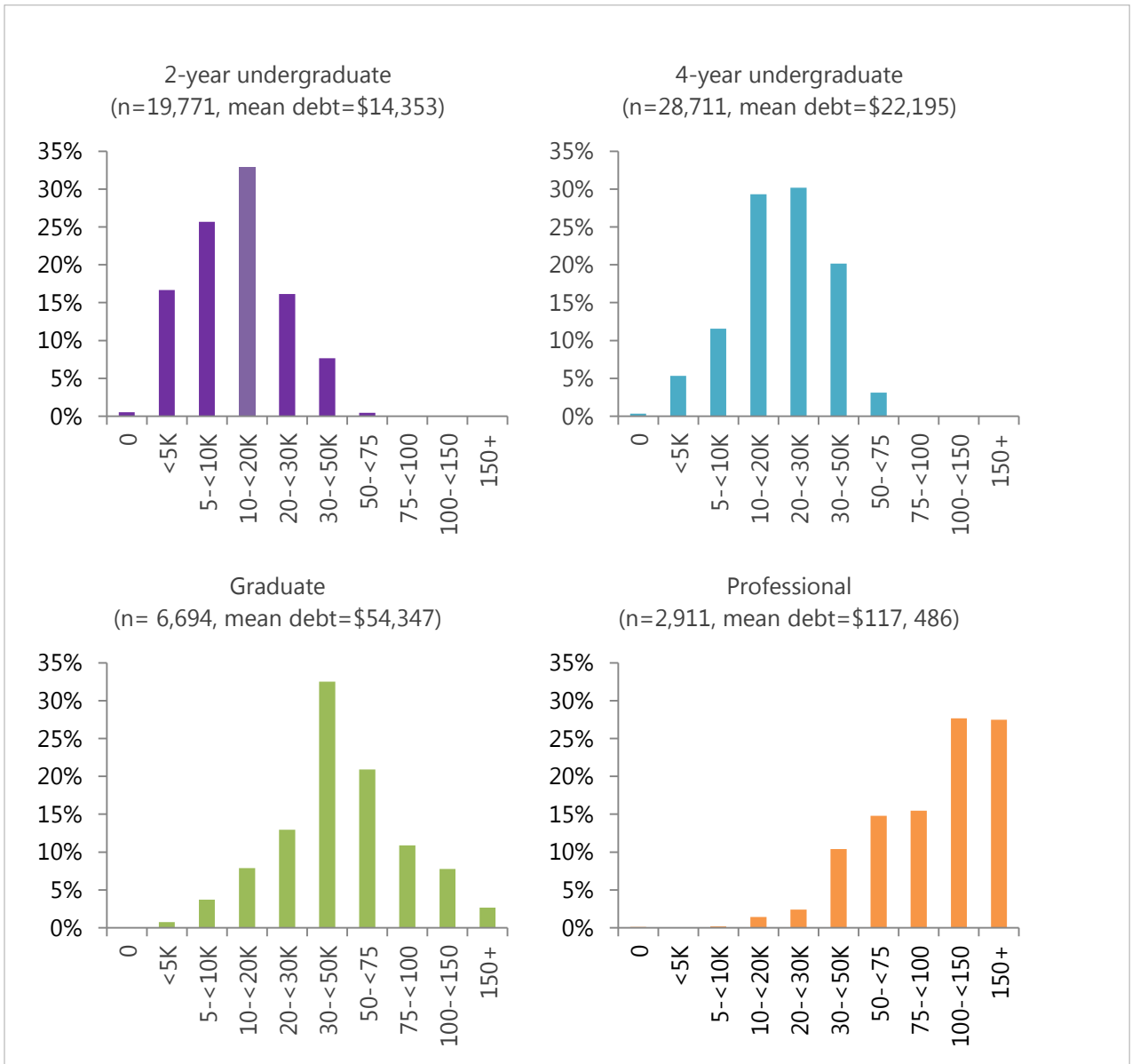
[Exhibit 1](#) shows how the average and distribution of debt amount vary among these populations in Washington. The graphs are based on data collected by the Washington State Achievement Council (WSAC) and exclude private student loans.⁵ A more detailed table on Washington student loan debt is provided in [Appendix I](#).

⁴ Federal Reserve Bank of New York Consumer Credit Panel. Equifax, Table 1. Number of student loan borrowers by state, US total, New York City, and NYC counties.

⁵ For a discussion of private student loan data, see pgs. 38-39.

Exhibit 1

Percentage Distribution of Washington Student Cumulative Federal Student Loan Debt:
Students with Any Loans, Class of 2015/16, by Student Type



Note:

Source: Washington Student Achievement Council (WSAC).

Types of Student Loans

Student loans fall into two general categories—federal and private loans. Federal loans are provided by the federal government. Private loans are loans provided by states, private banks, credit unions, or higher education institutions.

Loans can vary based on a number of factors including:

- **Borrower restriction(s)**—Who can qualify as a borrower?
- **Credit check required**—Does receiving the loan depend upon a satisfactory credit check?
- **Interest subsidy**—Does the loan issuer provide a reduced interest rate and/or forgive some of the interest while the student is in school?
- **Interest rate**—What interest rate will the borrower pay?
- **Maximum loan amount**—Is there a maximum lifetime or yearly limit on the amount of the loan?
- **Repayment timeline**—Is the student required to begin repaying the loan while enrolled in school?
- **Benefits**—Does the issuer provide benefits to the borrower, such as alternative repayment plans including those based on income or forgiveness of loans?

Exhibit 2 summarizes the ways in which federal, state, and private bank student loans vary.

In general, federal loans offer the most generous terms, followed by state loans. Private banks and credit unions offer the least favorable loan terms for most students.

Some colleges and universities also offer private loans to students; however, these loans make up a small percentage of the student loan market and are not included in **Exhibit 2**.⁶

⁶ According to the National Postsecondary Student Aid Study, institutional loans made up about 0.5% of the total loan usage by students in the 2007-08 school year.

Exhibit 2
Types of Student Loans

| | Loan | Name under FFELP* | Borrower restriction(s) | Credit check req'd | Interest subsidy | Interest rate (fixed) | Maximum loan amount | Repayment begins | Benefits (e.g., alternative repayment, forgiveness) |
|---------|------------------------------|--|---|--------------------|------------------|--------------------------------------|---|------------------|---|
| Federal | Direct Subsidized | Stafford Subsidized | Undergrad with financial need | No | Yes | 5.05% | \$23,000 | After graduation | Yes |
| | Direct Unsubsidized | Stafford Unsubsidized | Undergrad and graduate | No | No | 5.05% (undergrad) 6.6% (graduate) | \$31,000 (undergrad dependent) \$57,500 (undergrad independent) \$138,500 (graduate/professional) | After graduation | Yes |
| | Perkins** | N/A | Undergrad or graduate with exceptional need | No | Yes | 5.0% | \$27,500 (undergrad) \$60,000 (graduate /professional, includes undergrad debt) | After graduation | Yes |
| | Direct PLUS | Parent Plus or Graduate/ Professional PLUS | Graduate/professional or parents of undergrads | Yes | No | 7.6% | Cost of attendance, minus financial aid | Immediate | Yes |
| | State | - | Varies, often state resident or in-state attendance | Yes | Varies | 0%-6.88% | Varies, often cost of attendance, minus financial aid | Varies | Some states |
| | Private bank or credit union | - | None | Yes | No | 5.25%-14.59%*** | Often 100% cost of attendance; cost of attendance, minus financial aid; or a specific amount (e.g. \$100,000) | Immediate | No |

Notes:

*Federal Family Education Loan Program (FFELP or FFEL Program). For simplicity's sake, this report uses the terms Direct Loans and Direct PLUS Loans whenever possible. However, some of the older federal loans may have been issued under the FFEL Program by a state or private financial institution rather than directly by the federal government and may have slightly different loan terms than those reported here.

**Not all schools participate in the Perkins Loan Program.

***Aggregated across six major private loan providers. See Nykiel, T. (2018, July 31). [Current student loan interest rates and how they work](#). Nerdwallet.

Historical Role of the States

Prior to 2010,⁷ the Higher Education Act of 1965 allowed states to issue federal student loans under the Federal Family Education Loan Program (FFELP or FFEL Program).⁸ These loans were issued by states or private banks and were subsidized and guaranteed (i.e., “backed”) by the federal government. Under the FFEL Program, many states built up substantial portfolios of federal student loans.

Students could also receive loans issued directly by the Department of Education under the William D. Ford Federal Direct Loan Program.⁹ However, this was less common as not all schools participated in the Direct Loan Program.

Some states had their own in-school student loan programs, typically designed to fulfill any need left unmet by federal loans. Prior to 2010, information on the state loan programs could be included with the students’ financial aid package. This information was known as the “preferred lender list.”

⁷ For a detailed discussion of the history of student loans in the United States, see Delisle, J.D. (2017). *Lessons from the defunct guaranteed student loan program*. [American Enterprise Institute](#).

⁸ Authorized by Title IV, Part B of the Higher Education Act of 1965.

⁹ Ibid, Part D.

Exhibit 3

Washington State’s Student Loan History

Prior to 2004: Washington participated in the FFEL Program through the Student Loan Finance Association (SLFA), a non-profit corporation. Washington did not have a state in-school loan program for the general student population at the time.

2004: SLFA was dissolved and its \$1.6 billion in assets were sold to a for-profit corporation (Sallie Mae). The state had no student loan bond issuer or student loan assets at this time.

2006: The state commissioned a study from the Department of Commerce (at the time the Department of Community, Trade and Economic Development—CTED). Based on the study recommendation, the Washington Higher Education Facilities Authority (WHEFA) was appointed as the state student loan bond issuer. WHEFA could issue bonds to fund a FFEL Program and possibly a supplemental in-school student loan program.

2008 and 2010: Changes to federal legislation regarding student loan bond issuance and the ending of the FFEL Program led the state to stop pursuing a student loan bond issuance.

Present: Washington State does not currently offer a general in-school loan program. However, it does offer other specialized programs, including loans for entry-level aerospace workers and a loan repayment program for health professionals working in underserved areas.

President Obama launched an initiative to eliminate the FFEL Program in favor of direct lending by the federal government. This proposal was enacted as part of the 2010 Affordable Care Act, and all new federal student loans as of July 1, 2010 have been directly issued by the Department of Education through the Direct Loan Program.¹⁰ As a result, states are no longer able to increase their portfolios of federal student loans.

The law also removed the option to include information about any state in-school loan programs on the “preferred lender list.” In interviews with WSIPP (see [Section II](#)), some states reported this has reduced the visibility of their in-school loan programs.

[Student Loan Refinancing Overview](#)

Student loan refinancing is provided by private banks, credit unions, and some states.¹¹ The market for refinancing student loans is a relatively recent development with most private companies founded in the early 2010s.¹² Similarly, the earliest state programs were established in 2013 and 2014.

¹⁰ Health Care and Education Reconciliation Act of 2010, [Pub. L. No. 111–152](#).

¹¹ The federal government does not offer refinancing. However, it does provide a consolidation loan, which allows individuals to combine multiple federal loans into a single loan. Borrowers can choose among multiple repayment plans and may extend the term of their loans. Unlike refinancing in which the interest rate is based on market conditions and the borrower’s credit score, the interest rate for federal consolidation loans is a weighted average of existing loans.

¹² For example, SoFi, which holds one of the largest market shares, was founded in 2011. CommonBond, another company focused on refinancing loans, was launched in 2012. The first state refinancing program was created in 2013.

The refinancing market has grown significantly. In 2013, the volume of the four largest issuers was only \$152 million. By 2017, the volume had increased to \$4.9 billion (nominal dollars).¹³

The next section discusses why lenders (private banks and states) choose to create refinancing programs, why borrowers choose to refinance, and the typical characteristics of borrowers.

[Lenders](#)

[Private Banks and Credit Unions](#)

Private companies offer student loan refinancing because they can make money from the difference between the market interest rates they can offer on refinanced loans and the interest rates students have on their existing loans.

Up until 2013, federal student loan interest rates were not related to market interest rates, which were typically between 6.0% and 8.0%. With the economic downturn of the late 2000s, market interest rates fell to a lower rate than what was offered by the federal government. As a result, private lenders could offer significantly lower interest rates than the rates held by borrowers on their existing federal student loans and still make a profit.

Federal loans issued more recently are not as profitable to refinance because the difference between the interest rate on the original loan and the interest rate of the refinanced loan is small or even negative. For example, current Direct Loans from the federal government have an interest rate of

¹³ MeasureOne Private Student Loan Report Q3 2017, slide 15.

only 5.05%. Current refinance fixed interest rates offered by the private company SoFi are between 3.89%-7.80%.¹⁴

However, it may be profitable to refinance Federal Plus and private student loans as their interest rates are significantly higher than current market interest rates (see [Exhibit 11](#) in [Section II](#) for rates).

Whether the student loan refinancing market continues to grow is a point in question. Interest rates are currently on the rise.¹⁵ As discussed, when federal student loan interest rates are below the rates offered through refinance programs, it does not likely benefit borrowers to refinance.

There is no publicly available information on the types of individuals who refinance through private companies. The marketing materials of these companies provide insight into their target market—high debt, high-earning individuals. For example, one private refinancing company, CommonBond was founded to serve individuals in Master of Business Administration (MBA) programs. SoFi, one of the largest private refinancing companies, targets a subset of the student loan market with higher FICO scores¹⁶ and higher incomes.¹⁷ These individuals often carry high student debt loads but also have significant income or earning potential.

When advertising their programs, private companies show a range of possible interest rates—the lowest of which are known as “teaser rates.” Only borrowers with the highest credit rating typically qualify for the lowest rates. The actual average interest rate received by borrowers is not publicly available.

[State Refinancing Programs](#)

Fourteen states have active student loan refinancing programs that are run by the state; one additional state has a state refinancing program scheduled to start in fall 2018. WSIPP reviewed the 15 state programs and interviewed officials from each state. More detailed information on the different state loan programs is provided in [Section II](#).

During our interviews, state program representatives reported a number of reasons for beginning a state refinancing program. Some major reasons are listed below.

[Maintain Existing Portfolio.](#) Some states with large in-school student loan portfolios reported they were motivated in part to prevent those loans from being refinanced by private financial institutions or other states.

[Aid Economic Growth.](#) Several states reported that their general loan refinancing programs were also intended to improve state economic growth by motivating highly educated graduates to remain in state or by giving businesses a way to entice new employees to either remain or move in state.

One state reported a desire to help first-time homebuyers who may be deterred by existing

¹⁴ [SoFi student loan refinancing rates and terms](#), as of June 2018.

¹⁵ Kosar, J. (2018, October). [Get ready for a big, fast rise in interest rates](#). *Forbes*.

¹⁶ A FICO score is a type of credit score used by lenders to assess credit risk.

¹⁷ Renton, P. (2013, September 24). [SoFi adding leverage for their alumni investors](#). Lendacademy.

loan payments. Maine, which has an unusual program structure (see [Exhibit 4](#)), reported aiding economic growth by supporting a private bank refinancing program.

Offer an Alternative to Private Refinancing.

Most states reported that they were motivated to offer debt relief for state residents who could not qualify for private loan refinancing or who could only qualify with high-interest rates.

Borrowers

Why Borrowers Refinance

Most borrowers refinance their student loans for several reasons.

Lower Cost. Refinancing can allow borrowers to reduce the overall amount of interest paid over the lifetime of the loan(s). Lower interest payments can be achieved by securing a lower interest rate or by shortening the term of the loan. Savings can also be achieved by reducing both the interest rate and loan term in combination.

Lower Monthly Payments. Refinancing can allow borrowers to reduce their monthly payments by extending the loan term. Borrowers may pay less each month but are required to pay over a longer period of time.

Greater Simplicity. Borrowers can consolidate all loans to one provider and make a single monthly payment.¹⁸

¹⁸ The federal government offers a loan consolidation program which allows students to consolidate federal loans. The program provides students with the benefits of refinancing without the potential drawback of losing access to some of the other benefits discussed in Section V. Similarly, there are private student loan consolidation programs which might also provide students with the ability to simplify their payments.

Exhibit 4

Alternative Model: Maine

The Finance Authority of Maine (FAME) has a unique refinancing program. Instead of issuing refinanced loans itself, FAME serves as the guarantor of the loans made by private banks and credit unions. As a guarantor, Maine promises that if a borrower defaults, the state will repay 90% of the defaulted loan to the lender. In return, the lender puts up the capital and originates and services the loans.

Most of the participating banks and credit unions are too small to offer a student loan refinance program without assistance. In addition to assisting student loan borrowers, the program also serves FAME's overlapping goal of encouraging economic development.

In summary, borrowers are likely to refinance their loans when a) the available interest rate is lower than the borrower's current rate and/or b) the borrower wants lower monthly payments.

The size of the monthly payment and the total cost of the loan are inversely related. Loans paid back over a longer period of time tend to have lower monthly payments but a higher total cost (due to more paid interest). Loans paid back over a shorter period of time tend to have higher monthly payments but a lower total cost (due to a lower interest rate).

The first option is likely preferred by individuals who struggle to make monthly payments, while the second option may be preferred by individuals with disposable income. However, low-risk individuals may be

able to decrease both their total and monthly costs by refinancing to a lower interest rate.¹⁹

Who is Refinancing?

As discussed previously, individuals who are targeted to refinance with private banks and credit unions tend to be relatively recent graduates from professional programs (e.g., MBAs) who have a high amount of debt and a high income or earning potential. These individuals may have significant private student loans and/or Federal Direct Plus Loans, which currently have an interest rate of 7.6% (see [Exhibit 2](#)).

Borrowers through state programs often have slightly lower credit scores and less debt than those targeted by private companies. The value of the average loan being refinanced varies across state programs but often falls between \$35,000 and \$50,000.²⁰ The higher average typically comes from New England, where both the average cost of attendance and average FICO score is higher. Some states with larger refinance programs did discuss competing with private companies to refinance the same borrowers. States reported these highly targeted individuals have over \$100,000 in debt and significant earning potential.

Some states we talked to experienced a shift in the types of loans they refinanced and the characteristics of the borrowers who were refinancing. During the first year of a program, states reported refinancing borrowers with older federal loans with higher interest rates. As those borrowers' loans were refinanced, states saw a shift toward borrowers who graduated about three years ago and parents wanting to refinance loans taken out on behalf of students.

Private, Federal Grad Plus, and Federal Parent Plus Loans are popular to refinance as they have higher interest rates than the rates offered by refinancing. Borrowers rarely refinance recent undergraduate Direct Loans, as they have relatively competitive (lower) interest rates. Some states also report that they refinance loans that were issued through the state's own in-school loan programs.

¹⁹ Cox, N. (2017). *Pricing, selection, and welfare in the student loan market: Evidence from borrower repayment decisions*. Unpublished manuscript, pg. 8.

²⁰ All dollars reported in Section II are nominal (unadjusted for inflation) estimates provided by programs over the past five years.

II. State Student Loan Refinancing Programs

This section of the report satisfies part (b) of the legislative assignment (see page 2). In this section, we focus on the 14 states with active student loan refinancing programs and one additional state with a program scheduled to start in fall 2018. The affiliated state, program name, and start date of each program is listed in [Exhibit 5](#). WSIPP reviewed the programs and interviewed officials at all organizations, either by telephone or in writing.

The size of state student loan refinancing programs—measured by the number of borrowers and volume of loans—varies significantly. While not easily comparable due to variations in when the programs were created and data collection practices, the typical mid-size program has refinanced approximately 150 borrowers with loans worth a total of about \$5-\$6 million. The larger programs have refinanced around 400-2,000 borrowers with loans worth about \$14.5-\$80 million. Louisiana, which launched its program at the end of 2016, has the smallest active program with only two borrowers and loans worth under \$200,000. North Dakota has the largest program with over 10,000 borrowers with loans worth about \$1.2 billion.²¹

²¹ Given comparability issues, the numbers presented here should be considered estimates based on current year data collected over the variable length of different state programs. The influence of inflation on dollar amounts should be small, as all programs were established over the past five years, with the majority in the past three years.

Exhibit 5
State Student Loan Refinancing Programs

| State | Organization name | Created |
|----------------|--|-------------------|
| Alaska | Alaska Student Loan Corporation | 2016 |
| Arkansas | Arkansas Student Loan Authority | 2018 (planned) |
| Connecticut | Connecticut Higher Education Supplemental Loan Authority | 2016 |
| Indiana | INvestED | 2017 |
| Iowa | Iowa Student Loan | 2016 |
| Kentucky | Kentucky Higher Education Student Loan Corporation | 2013 |
| Louisiana | Louisiana Education Loan Authority | 2016 |
| Maine | Finance Authority of Maine | 2016 |
| Massachusetts | Massachusetts Educational Financing Authority | 2015 |
| Minnesota | Minnesota Office of Higher Education | 2016 |
| New Hampshire | New Hampshire Higher Education Loan Authority | 2016 |
| New Jersey | New Jersey Higher Education Student Assistance Authority | 2016 |
| North Dakota | Dakota Education Alternative Loan | 2014 |
| Rhode Island | Rhode Island Student Loan Authority | 2014 |
| South Carolina | South Carolina Student Loan | 2014 |

Notes:

The information in this document is current as of June 2018.

Source: [2017-18 nonprofit and state-based education loan handbook](#). Education Financial Council.

Some states, particularly those with existing in-school loan programs, reported that they established a refinancing program in about one year. Other states described logistical, political, or legal hurdles that prolonged the process to several years.

This section discusses the issues that states consider when establishing new student loan refinancing programs and the program structure, borrower requirements, and refinance loan characteristics offered by other states.

Major Considerations for a New Program

States have to consider a variety of issues when establishing a new student loan refinancing program. These include the following:

- Market demand,
- Borrower criteria,
- Loan offering,
- Program cost,
- Partners, and
- Marketing.

Not every state considered each issue listed above. States reported a range of ways to consider these issues, from formal analysis to a more ad hoc approach.

Market Demand

One of the first steps in establishing a new program is to determine whether there is a sufficient market of borrowers who would be interested in refinancing through a state program.

To determine the size of the market, states need to estimate the number of borrowers, the size of the student loans, and the interest rates associated with those loans.

Capturing information on the number of outstanding federal student loans and their associated interest rates is a relatively straightforward process using federal data. However, gathering information on private debt is more difficult. States often reported hiring a private consultant company and/or credit bureau to develop a market report.

Some states gauged market demand by relying on their knowledge of the state student loan landscape from the existing in-school programs. Other states began pilots or soft launches to test the program before committing major funds.

After determining whether there is sufficient demand for a refinancing program, states need to determine whether they can provide a loan(s) that will benefit the potential borrowers. This process includes determining borrower criteria and the loan terms and conditions.

Borrower Criteria

Borrowing criteria determine which individuals are eligible to refinance their loans. An estimate of riskiness is calculated based on requirements often developed in cooperation with underwriters and driven by market forces. [Exhibit 9](#) summarizes those requirements. These criteria can include characteristics related to the borrower's (and potentially co-signer's) creditworthiness including FICO score, debt-to-income ratio, debt history, and income. They can also include determining whether the individual is closely enough tied to the state (e.g., current resident, attended school in-state). The borrowing criteria largely drive the riskiness of the refinanced loans.

Having more stringent criteria for borrowers results in less risk of delinquency or default. However, the stricter the borrower requirements, the fewer individuals are able to qualify for the programs. The riskiness of the loans affects the cost of the program to the state, either directly by requiring the program to absorb the cost of defaults or indirectly by making it more costly to raise funds.

Loan Offering

States reported working closely with financial consultants, loan servicers, and underwriters (discussed below) to determine the features of the offered loan. These features include the following:

- Interest rate,
- Loan terms (i.e., duration),
- Repayment schedules,
- Fees and penalties,
- Co-signers, and
- Benefits (e.g., forgiveness in the case of disability).

In order to motivate the borrower to refinance, the refinanced loan needs to provide a benefit over the borrower's original loan. This benefit could stem from lower monthly payments and/or from lower total payments made over the lifetime of the loan.

Decisions about structuring refinanced loans are strongly influenced by market forces. States emphasized the important role that interest rates play in determining whether refinancing programs are successful. To be competitive, the program's interest rate must be below the federal loan rate and either match or undercut other refinancing programs that are available to borrowers.

For example, interest rates can be fixed or variable and can be provided in different tiers for which borrowers can qualify for based on the borrower's creditworthiness. Most programs use tiered interest rates to lessen potential loan defaults by offering lower interest rates to borrowers deemed less risky and higher interest rates to borrowers deemed riskier.

One state reported having difficulty marketing loan terms that were of different lengths than the industry standard (typically 5, 10, and 15 years). Additionally, any non-standard loan terms make working with an external loan originator or servicer (see below) more costly to set up and administer.

Exhibit 6

Literature on the Impacts of Borrower Requirements

In part (c) of the assignment, the legislature asked WSIPP to review the available literature on the impacts of borrower requirements of similar state refinancing programs. In a literature review conducted in April 2018, WSIPP was unable to locate significant rigorous research on the impact of borrower requirements for student loan refinancing programs specifically. We did identify one unpublished article on refinancing (discussed below) and several related areas of research. One of the related articles examined the effects of nuanced risk classifications in the car financing market. Another explored how interest rates and loan terms affect borrower demands for household financing. Another was related to optimizing borrowing limits and repayment structures for original student loans.

During our interviews, states reported little flexibility in determining borrower criteria, which are largely driven by market constraints and developed in consultation with financial consultants. As shown in [Exhibit 9](#), there is little variation in borrower requirements.

One recent unpublished paper did explore the trade-offs between equity and efficiency in setting interest rates based on borrower characteristics. Using a private refinancing company's dataset of borrower-level risk information, Cox (2017) modeled the effects of risk-based pricing on many outcomes, including borrower welfare. In risk-based pricing, the setting of individual interest rates is based on borrower risk of default. This risk is estimated by companies using a proprietary formula based on FICO score and other individual characteristics, possibly including income, savings, school rank, and degree type. Most of the state refinancing programs use this technique by offering tiered interest rates based on borrower risk (see pg. 24). Cox found that using risk-based pricing does create gains for low-risk borrowers and losses for high-risk borrowers compared to universal interest rate setting.

Source:

Cox, N. (2017). *Pricing, selection, and welfare in the student loan market: Evidence from borrower repayment decisions*. Unpublished manuscript.

Program Cost

After determining a) that there is a sufficient market of borrowers and b) the type of refinance loan that could offer borrowers a potential benefit, states must also determine the cost at which they can offer the loan.

This cost is broken down into the cost to administer the program and the cost to refinance the loans. The cost to administer a program varies across states and depends on pre-existing infrastructure and the size of the initial launch. States with an existing in-school loan program were able to soft launch a small refinancing program without significant expense. In an analysis of program costs in three states, one report found that programs had initial or one-time costs ranging from \$175,000 to \$400,000 and annual operating costs from \$708,000 to \$1,028,000.²²

Additionally, the overall cost of the program is also driven by the cost of funds. The ways states fund their programs is described in detail on pages 18-19.

As discussed previously, the underlying riskiness of the borrower pool drives the cost of raising funds. If the agency or state funds the program directly, delinquencies or defaults increase the amount the state has to cover. If the state raises funds through a bond backed by the assets of the loans, having less stringent borrower requirements increases the riskiness of the assets and makes the bond less attractive to investors. As a result, the cost of

funds increases. As the cost of funds and/or administration increases, it becomes more difficult for a state program to offer a competitive interest rate.

Partners

States reported that they worked with a variety of consultants to establish and administer their refinance programs. Student loan refinancing is a relatively niche market; because of this, states recommended being selective and choosing experienced partners. This is particularly relevant for any organization looking to issue student loan bonds, which are complex and require working with an underwriter, a credit rating agency, and financial consultants.

Additionally, states must choose to originate and service their loans either in-house or through an external contractor. The regulatory burden to administer student loans is heavy. Each state has specific requirements that can differ from federal requirements. Some states reported outsourcing loan origination and/or servicing in order to avoid the risk of being in noncompliance.

Marketing

State student loan refinancing programs must compete against private companies with significant marketing budgets. During our interviews, many states underscored the importance of having a marketing budget and emphasized that having a competitive refinancing program alone is not enough. Some states suggested considering a variety of ways to raise the program's visibility. For example, centralizing all student loan services within a single agency can improve recognition by potential borrowers. Some states reported using direct mail marketing campaigns and the online student loan aggregator, Credible, to help drive potential borrowers to their programs.

²² DeFazio, B. (2017). *Student loan refinancing authority*. Office of Legislative Oversight, [OLO Report 2017-8](#). Montgomery County, Md. Note that these amounts were not provided in specific year dollars but developed from estimates provided by three state programs established in 2013, 2014, and 2016.

Structure of State Refinancing Programs

Variation in program structure is summarized in [Exhibit 7](#) and discussed below.

Exhibit 7

Structure of State Student Loan Refinancing Programs

| State | In-school loan program | Organization type | Funding type | Loan servicing |
|----------------|------------------------|-------------------------------|---|----------------|
| Alaska | Yes | State agency | Program funds | In-house |
| Arkansas | No | State agency | Program funds | Outsourced |
| Connecticut | Yes | Quasi-government organization | Program funds | Outsourced |
| Indiana | Yes | Quasi-government organization | Program funds | Outsourced |
| Iowa | Yes | Quasi-government organization | Tax-exempt bonds, taxable bonds, general funds | In-house |
| Kentucky | Yes | Quasi-government organization | Tax-exempt bonds, taxable bonds | In-house |
| Louisiana | No | Quasi-government organization | Program funds | Outsourced |
| Maine | Yes | Quasi-government organization | Other (see Exhibit 4 on pg. 10) | Outsourced |
| Massachusetts* | Yes | Quasi-government organization | Other financing | Outsourced |
| Minnesota | Yes | State agency | Program funds | Outsourced |
| New Hampshire | Yes | Private non-profit | Taxable bonds, other financing | In-house |
| New Jersey | Yes | State agency | Tax-exempt bonds | In-house |
| North Dakota | Yes | State bank | Other financing | In-house |
| Rhode Island | Yes | Quasi-government organization | Taxable bonds, other financing, general funds | In-house |
| South Carolina | Yes | Private non-profit | Program funds | Outsourced |

Notes:

*Started out using a taxable bond but now uses bank financing.

Source: WSIPP interviews with agency officials in June and July 2018 supplemented by information from program websites.

In-School Loan Program

Thirteen of the 15 states reported having an existing in-school loan program prior to establishing a refinance program.²³ As previously mentioned, Washington does not have an in-school student loan program.

States reported that having an existing in-school loan program may have helped establish their state refinancing program as the states had existing administrative agencies in place; did not have to engage in significant hiring; and had experience funding and, in some cases, originating or servicing student loans.

Organization Type

Other states house their loan refinancing programs within several different organization structures: 1) quasi-government organizations, 2) state agencies, 3) private non-profits, or, in one instance, 4) a state bank.

The majority (8 of the 15) of the state refinancing programs are run by quasi-governmental organizations. These organizations are typically financially self-sufficient non-profits established by the state, often with board members and leadership who represent or are appointed by state government. In general, this type of organization has more independence from state oversight and functions more like a business than a traditional state agency. While quasi-governmental organizations and state agencies make up the majority of state refinancing programs, there are two

private non-profits (New Hampshire and South Carolina).

North Dakota is unique in that it has a state-run bank that operates its refinancing program. The Bank of North Dakota is self-funded and its proceeds are reinvested into the state's general fund. The North Dakota State Legislature oversees the bank's budget and staffing levels.

Some programs also have multiple subsidiaries that deal with different aspects of the refinancing process. For example, Iowa has both a for-profit and a non-profit component. The for-profit subsidiary services student loans both for Iowa's loan program and other loan organizations.

During our interviews, states often discussed the need for organizational flexibility to respond to market conditions and alter program offerings rapidly. The hardwiring of any specific program requirements in statute was described as a significant barrier to program success.

Funding Type

States use a variety of sources to fund their refinancing programs. Some states were able to leverage existing program funds, which were often left over from the former FFEL Program²⁴ or stemmed from a state in-school loan program. Other states issued taxable or tax-exempt bonds. Still others used bank financing or a blend of different funding sources.

The type of funding used by a program affects the flexibility of program design and

²³ Louisiana planned to launch an in-school program, but due to legal and financial complications chose to use the structure it had built to launch a refinancing program instead. Similarly, Arkansas is developing an in-school program, which is scheduled to launch in the 2019-20 school year.

²⁴ See discussion of the states' role in the FFEL Program on pg 7.

cost of funds. Issuing bonds provide the least amount of program flexibility.

Program Funds. States using program funds (6 of the 15) appear to have several advantages. Program funds typically stem from state in-school loan programs or leftover FFELP funds. States using program funds have existing in-house expertise in student loan administration. As a result, they had lower start-up costs.

Bonds. Five programs were funded in whole or in part by issuing taxable or tax-exempt bonds. A state may choose to issue a bond to finance the purchase of original student loans and the issuance of a new refinanced loan. As students pay back their refinanced loans over time, their payments are used to pay back bondholders with interest.

The bonds used to finance the state programs were all revenue bonds, where the interest rate paid by the state is determined by the riskiness of the underlying student loans.²⁵ Using bonds requires states to work closely with an underwriter and credit rating agency to determine risk. The process limits the state's flexibility in setting both borrower criteria and the details of loans being offered.

States that fund their programs with bonds tend to have extensive experience with bond issuance, larger refinance programs, and/or well-established in-school state loan

programs. Due to their experience, these states have good default data to accurately estimate the market demand and default rate of their underlying loans. This high-quality information can lead to a higher rating on the bond, which leads to lower interest rates and a lower cost of funds.

Three states use tax-exempt bonds to fund all or part of their refinance programs. Typically, students are charged interest on their refinanced loans that is below the interest rate that the state must pay on tax-exempt bonds. This difference in interest rates can help fund the state's refinance program.

The interest rate on tax-exempt bonds may be lower than the interest rate on other sources of funds available to the state (e.g., bank funding). This is the major reason why it may be less costly for states to fund a program through tax-exempt bonds rather than through other sources of funding. However, the state may incur costs related to the issuance of a bond and the reserve requirements to insure against the possibility of defaults. Individual investors may be interested in purchasing tax-exempt bonds because the interest earned on the bonds is excluded from gross income.

The Washington Higher Education Facilities Authority (WHEFA) has studied the possibility of issuing a student loan revenue bond and anticipates Washington would have to provide significant reserve requirements. These are up-front funds used to secure the bond by offsetting any defaults. The reserve requirements for a new student loan bond issue might be around 15%-30% of the total bond. For example, issuing a \$100 million bond would

²⁵ Unlike a revenue bond, the interest rate for general obligation bonds is set based on the credit rating of the state. Washington's constitution does not allow for the use of the state's credit for any kind of individual gain, which makes it unlikely that a state student loan refinancing program could be funded using a general obligation bond. Richter, J., Deputy Treasurer, Office of the State Treasurer, personal communication, 2018, July 18.

require the state to provide \$15-\$30 million in reserves.

There are a number of legal limitations regarding the use of tax-exempt bonds for student loan refinancing (see [Exhibit 8](#)).

Other Financing. Some organizations use bank financing outside of the bond issuing process. For example, Massachusetts funds its program using commercial paper, a type of short-term bank financing that is not secured by underlying assets. North Dakota was able to fund its program through the use of state bank funds. Many states combine funds from multiple sources, including agency funds, general obligation funds, and bonds.

Loan Servicing

Loan origination is the process of starting the loan from the lender's point of view. It includes collecting loan applications and other financial documents, qualifying or disqualifying the application for a loan, deciding the individual's loan options (including the interest rate), and filing the necessary paperwork to underwrite and close the loan.²⁶

In order to collect interest, principal, or monthly payments from borrowers, companies and organizations use a loan servicer. Loan servicing plays a key role in controlling loan delinquency and defaults. Nine of the 15 states use a third-party loan servicer as opposed to servicing the loans themselves.²⁷ Many states, even ones that

service their loans themselves, hire a third-party originator.

States reported that they chose to outsource loan origination and/or servicing because of start-up costs to create an in-house program, the desire to leverage expertise from servicing experts, to take advantage of the economy of scale provided by the large servicing companies, and to avoid the significant difficulties of maintaining regulatory compliance with overlapping state and federal banking and student loan refinancing laws. States that chose to keep origination and/or servicing in-house cited their past expertise in those functions, the flexibility to establish their own servicing plans, and the ability to improve service quality and reduce delinquency.

²⁶ For more information on originations see Investopedia. [Origination](#).

²⁷ States may also have a legal obligation to have a back-up loan servicer regardless of whether they serve loans in-house or out-of-house.

Exhibit 8

Legal Authority to Use Tax-Exempt Bonds

Part (a) of the legislative assignment directed WSIPP to review the federal guidance on the use of tax-exempt bonds to fund student loan refinancing. Section 144 of the Internal Revenue Code (IRC) describes the conditions under which states can refinance student loans on a tax-exempt basis. The U.S. Department of Treasury released additional guidance in 2015 that clarified and expanded those requirements. The guidelines limit the types of individuals eligible to have their loans refinanced on a tax-exempt basis as well as the types and amounts of qualifying loans.

Eligible Individuals. The Treasury's guidance established a nexus requirement that identifies which individuals can refinance their loans. Tax-exempt bonds may only fund programs that benefit residents who have a nexus to the state (i.e., are either residents or attended school in the state). Note that this may exclude parents looking to refinance loans through their current state program if the student neither attended nor currently resides in-state. Additionally, students who attended school in-state but now reside out-of-state may also qualify to participate.

Qualified Loans. The IRC requires that the loans being refinanced not exceed "the difference between the total cost of attendance and other forms of student assistance." This requirement introduces two potential problems related to the loan type and amount as discussed below:

- **Loan Types.** The above language implies that "other forms of student assistance" cannot be eligible for tax-exempt refinancing, but it does not clearly define what loans types fall into that category. Some types of financial aid are clearly student financial assistance (e.g., grants) and therefore are not eligible for refinancing under the tax code. Other types of loans are clearly not considered assistance (e.g., private loans, state in-school loans) and therefore are potentially eligible for refinancing on a tax-exempt basis. Some federal loan types are specifically identified in the code as exceptions to this requirement and eligible for financing using tax-exempt funds (Parent PLUS Loans and Public Health Service Act Loans). However, there are other federal loan types that are more difficult to categorize as being or not being "student assistance," such as Stafford or Grad PLUS Loans.
- **Loan Amounts.** The IRC also requires that refinanced student loans not exceed the difference between the total cost of attendance and other forms of student assistance. The Treasury guidance provided some clarification related to how to calculate the maximum amount of a qualified loan and allows states to certify loans as qualified expenses. Certification is simple for federal loans, which cannot legally exceed that amount. However, certification can be problematic for private loans, where record keeping is not required. A state looking to refinance state in-school loans or private loans would need to confirm that those loans did not exceed the qualified amount. Even if state in-school loan programs and banks were careful to limit loan amounts, records certifying that fact may be currently unavailable.

The states currently using tax-exempt bonds only refinance clearly eligible loans that can be certified as qualified expenses. All three states refinance loans issued by their own in-state loan programs and two also refinance Parent Plus Loans.

Borrower Requirements for State Refinancing Programs

State requirements for qualifying borrowers are summarized in [Exhibit 9](#) and discussed below. Note that the table also provides the borrower requirements of one of the largest private student loan refinancing companies, SoFi, for comparison. Borrower requirements are established by programs, often in collaboration with financial consultants and/or bond rating agencies. These requirements are intended to exclude borrowers who might default and/or be delinquent in paying their student loans, while not being so strict so as to deny desirable borrowers from refinancing.

Nexus Requirement

Ten of the 15 states require borrowers to have a nexus connection to the state. The requirement states that borrowers must be residents of the state or have attended school in the state. Having a nexus requirement is a legal prerequisite for funding a refinance program with tax-exempt bonds (see [Exhibit 8](#)).

In some cases, out-of-state borrowers have higher interest rates than their in-state equivalents. For example, North Dakota offers in-state borrowers a 1.0% lower interest rate than out-of-state borrowers across all of its student loan programs.

Minimum Credit Score

States require a minimum FICO score of 670-720 for borrowers to refinance without a cosigner.

Maximum Debt-to-Income Ratio

States also tend to require that potential borrowers not have a debt-to-income ratio above 40%. A debt-to-income ratio is calculated by taking an individual's combined monthly debt payments (e.g., mortgage debt, auto loan debt, other personal debt, and rent payments) divided by his or her gross monthly income.

Employment or Income Requirement(s)

Most states have some form of an employment requirement. The states that have income requirements require potential borrowers make \$18,000 to \$50,000 per year (depending on the amount of debt being refinanced).

Parents' Eligibility

All but two states allow parents to refinance their children's student loans if they are in the parent's name. One state also allows student borrowers to refinance Parent PLUS Loans taken out by their parents.

In addition to establishing the requirements mentioned above, some states attempt to reduce risk in other ways. For example, Massachusetts requires borrowers to have made their last 12 loan payments on time.

Exhibit 9

Borrower Requirements for State Student Loan Refinance Programs

| State | Nexus requirement | Minimum credit score | Maximum debt-to-income ratio | Employment or wealth requirement(s) |
|------------------------------------|-------------------|------------------------------------|---|--|
| Alaska | Yes | 720 | None | Employed |
| Arkansas | Yes | 680 | 40% (25% excluding mortgage or rent) | None |
| Connecticut | Yes | 675 (alone) 650 (for cosigners) | 43% | None |
| Indiana | Yes | 670 | 40%-50% | \$36,000/year |
| Iowa | No | 690 | 40% (25% excluding mortgage or rent) | None |
| Kentucky | No | 670 | 38% | \$18,000/year |
| Louisiana | Yes | 700 | 40% (25% excluding mortgage or rent) | \$25,000/year |
| Maine | Yes | 680 | 40% | \$24,000/year |
| Massachusetts | No | 670 | \$1,200 available monthly funds after expenses are paid | \$24,600/year |
| Minnesota | Yes | 700 | 45% for borrowers without a cosigner (40% with) | Employed ^a |
| New Hampshire | No | 700 | 43% | \$30,000/year \$50,000/year for loans over \$100,000 |
| New Jersey | Yes | 670 | 40% | Minimum income of \$40,000 |
| North Dakota | No | 700 (alone) 650 (for cosigners) | 40%-50% | None |
| Rhode Island | No | 680 | 50% | \$40,000/year |
| South Carolina ^b | Yes | 675 | 30% | Employed |
| SoFi (private lender) ^c | No | None, but generally above 700 | Unknown | Sufficient income (median income is \$106,000) Employed or offer to start work within 90 days |

Notes:

^a The borrower must be currently employed with the same employer for 60 days or more.

^b South Carolina plans to update its terms in fall 2018. The terms listed may not be the most current.

^c Information provided for comparison purposes. See Nerdwallet. (2016, August 17). [SoFi Personal Loans: 2016 Review \[Press release\]](#) and [SoFi's eligibility criteria](#).

Source: WSIPP interviews with agency officials in June and July 2018 supplemented by program websites.

State Refinance Loan Characteristics

The characteristics of refinance loans offered by other states is summarized in [Exhibit 10](#) and discussed below. For comparison, the table also details loans offered by SoFi. With the exception of some additional term lengths, SoFi generally offers loan terms similar to those offered by states.

Interest Rates

States offer similar loan refinance packages. All states offer a fixed rate student loan, and six states also offer a variable rate loan. States reported that fixed interest rates were simpler to finance and structure and more desirable to most borrowers in light of rising interest rates. Fixed interest rates range from 3.49% to 9.00%, and variable rates range from 2.67% to 8.50%.

Most state programs offer tiered interest rates. The specific interest rate an individual receives is based in part on an assessment of his or her risk of default or delinquency.

Term Length

A borrower's interest rate will also vary based on the loan term. A typical loan term duration is 5, 10, or 15 years, but several states also offer a 20-year term. Some states reported offering only one or two term options in order to simplify the program.

Loan Amounts

All states set a minimum allowable loan amount that a borrower can refinance. This minimum amount is anywhere from \$1,000 to \$10,000. States reported that the benefits from refinancing a very small loan would not offset the costs of origination and servicing.

Most states also set a maximum amount that a borrower can refinance. One reason provided was to limit the state's risk of borrower delinquency, default, permanent disability, or death. Another reason was to help as many borrowers refinance as possible given constraints on the volume of loans that a state can refinance at a time. However, states wishing to attract high-income, high-debt borrowers (i.e., medical doctors) do not have a maximum loan amount.

Fees

Borrower fees can be charged at various stages of the loan process in order to cover the costs associated with application processing, originating the loan, or sometimes in order to dissuade a borrower from paying off a loan before the term ends. Only one state charges a borrower's fee.

Qualifying Loan Types

Most of the states interviewed reported refinancing all education loan types—federal, private, and state; however, there are exceptions. Several states reported excluding particular types of loans in order to limit the volume of refinancing loans. Additionally, a few states do not refinance loans used to pay for-profit educational institutions.

Exhibit 10

Refinance Loan Characteristics Offered by Other State Programs

| State | Fixed rate interest | Variable rate interest | Term length (years) | Loan amounts |
|--|---------------------------|------------------------|---------------------|--------------------------------|
| Alaska | 4.60%-5.30% | Not offered | 5, 10, 15 | \$7,500-\$50,000 ^a |
| Arkansas | TBD | TBD | 5, 10, 15 | Not yet determined |
| Connecticut | 4.75%-5.00% ^b | Not offered | 5, 10, 15 | \$5,000-\$100,000 |
| Indiana | 4.18%-8.88% | 2.67%-6.31% | 5, 10, 15, 20 | \$5,000-\$250,000 |
| Iowa | 3.50%-7.50% | Not offered | 5, 10, 15, 20 | \$5,000-\$200,000 |
| Kentucky | 3.99%-7.99% | Not offered | 5, 10, 15, 20 | \$7,500 minimum |
| Louisiana | 5.50%-8.55% | Not offered | 5, 10, 15 | \$5,000-\$175,000 |
| Maine | 4.50%-9.00% | 4.25%-8.50% | 15, 20 | \$10,000-\$240,000 |
| Massachusetts | 4.95%-6.95% | 4.77%-8.12% | 10, 15 | \$10,000 minimum |
| Minnesota | 4.25%-6.75% | 4.00%-5.35% | 5, 10, 15 | \$10,000-\$70,000 ^c |
| New Hampshire | 4.29%-7.49% | 4.34%-7.14% | 5, 10, 15, 20 | \$1,000-\$200,000 |
| New Jersey | 4.90%-6.90% | Not offered | 10 | \$5,000 minimum |
| North Dakota | 5.45% ,6.45% ^d | 3.84%-4.84% | 10 | \$1,000 minimum |
| Rhode Island | 3.49%-7.89% | Not offered | 5, 10, 15 | \$7,500-\$250,000 |
| South Carolina ^e | 4.24%-6.24% | Not offered | 5, 10, 15 | \$10,000-\$150,000 |
| SoFi Student Loan Refinancing ^f | 3.89%-7.80% | 2.51%-7.55% | 5, 7, 10, 15, 20 | \$5,000 minimum |

Notes:

^a If the borrower completed a degree, the Arkansas loan can be over \$50,000.

^b The Connecticut rates are only possible for borrowers applying with a cosigner.

^c The Minnesota maximum loan amount is \$25,000 if the borrower has completed a certificate, diploma, or associate's degree.

^d The Bank of North Dakota offers one interest rate from North Dakota residents and a 1.0% higher interest rate for non-residents. Non-residents also pay 3.75% in administrative fees not paid by residents.

^e South Carolina plans to update its terms in fall 2018. The terms listed may not be the most current.

^f Information provided for comparison purposes. See [SoFi student loan refinancing rates and terms](#).

Source: WSIPP interviews with agency officials in June and July 2018 supplemented by program websites.

Benefits

Almost every state offers loan forgiveness or discharge in the case of death and often in the case of permanent disability. A few states offer deferment in cases of financial hardship. Most states do not offer

alternative payment plans; however, Rhode Island offers an income-based repayment plan that is modeled off federal programs (see [Section V](#)), and Kentucky offers a graduated repayment plan, in which payments increase in size over time.

III. Potential Impact of a Washington Student Loan Refinancing Program on Borrowers

This section of the report satisfies part (d) of the legislative assignment. In this section, we estimate the impact of a hypothetical state student loan refinancing program on undergraduate and graduate student borrowers. We examine how a hypothetical Washington refinancing program would affect students in the graduating classes of 2012 and 2016 at Washington public and private colleges and universities for the following four student populations:²⁸

- 2-year undergraduate students²⁹
- 4-year undergraduate students³⁰
- Graduate students³¹
- Professional students³²

²⁸ WSIPP was directed to look at federal and private loans issued one, five, and ten years ago (loans issued in 2017, 2013, and 2008, respectively). However, our ability to do so was limited by the availability of historical data from the Washington Student Achievement Council (WSAC) and the Education Research & Data Center (ERDC). Instead, we focused on all loans held by the graduating classes of 2012 and 2016, which were likely issued between the 2006-07 academic year and the 2015-16 academic year.

²⁹ 2-year undergraduate: Attended community and technical college and/or private career college.

³⁰ 4-year undergraduate: Attended public 4-year research/comprehensive universities or independent/private 4-year colleges and universities.

³¹ Graduate student: Already holds a bachelor's degree and is enrolled in a program leading to a graduate degree (master's or doctoral).

³² Professional students: Pursuing a professional degree (including law school, dentistry school, or medical school students) at a public 4-year research/comprehensive university or independent/private 4-year college or university.

As stated in [Section I](#), students may benefit from refinancing if they are able to:

- Lower their total cost (cumulative loan payments);
- Lower their monthly payment amounts; or
- Simplify their payments through consolidation.

We perform a prospective analysis of the nominal savings from a reduction in total loan costs under a state refinancing program compared to a standard federal repayment plan if students were to refinance their existing loan balances in 2019.

We use data from the Washington Student Achievement Council (WSAC) to estimate the total payments for a representative Washington student in each of the four populations described above. Borrowers of federal student loans enter repayment within six months of leaving postsecondary education. The default loan repayment plan is the standard repayment plan, which obligates the borrower to make a fixed monthly payment. A borrower's payment depends on the amount they borrowed and the interest rate of the loan. The payment is determined such that the loan is repaid in ten years.

We compare the total nominal value of a) standard federal repayments to b) estimated payments if the borrower were to refinance in 2019 using a hypothetical program similar to state programs described in the previous section. The difference between these two amounts is the potential savings that a borrower could achieve by refinancing.

[Appendix II](#) provides a complete discussion of the methodology used in this analysis and detailed descriptions of the WSAC data, including definitions of the four student populations and a list of the student loan types used to calculate the total cumulative student loan debt. [Appendix II](#) also includes information on how our assumptions affect monthly loan payments.

[Exhibit 12](#) contains definitions for terms used throughout this section of the report.

Washington's Hypothetical Program

The characteristics of the hypothetical refinancing program we constructed are described in [Exhibit 11](#). Our hypothetical program reflects the typical loan characteristics of refinancing programs used by other states, as shown in [Exhibit 10](#) in [Section II](#).

In interviews, many states asserted that the terms of their student loan refinancing programs are driven by market constraints. This is reflected in the limited variation in the terms of student loan refinancing programs across states.

States currently offer fixed interest rates between 3.49% and 9.00% for a 5-, 10-, or 15-year term. We focus on the potential savings if Washington were able to offer an interest rate of 4.0%, 6.0%, or 8.0% for all three term lengths. We assume that there are no loan fees. We also assume that borrowers must have a minimum remaining loan balance of \$7,500 and no maximum loan amount to refinance.

Exhibit 11

Hypothetical Characteristics of a Washington Student Loan Refinancing Program

| Loan characteristic | Hypothetical WA program |
|---------------------|-------------------------|
| Interest rate type | Fixed |
| Interest rate | 4.0%, 6.0%, 8.0% |
| Term length (years) | 5, 10, 15 |
| Fees | None |
| Minimum loan amount | \$7,500 |
| Maximum loan amount | None |

It is important to note that the parameters of the hypothetical Washington program are based on the standard characteristics of other state programs, not on whether these loan terms could be offered by Washington if a refinance program were implemented. Assessing the feasibility of various terms is beyond the scope of this report.

Estimating Student Debt Load

Total student loan debt is estimated using data provided by WSAC, which collects information on all federal loans obtained by Washington students and information on other student loans for students who receive need-based aid.

We define the total student loan debt as the cumulative value of all federal student loans, excluding Parent PLUS Loans,³³ from the first

³³ We exclude Parent PLUS Loans, as these are typically held by the parent, not the student. We also exclude private loans, due to limited data availability. Finally, we exclude federal undergraduate student debt from our estimates of graduate and professional student debt.

time a student appears in the WSAC dataset to the graduation year of interest.³⁴ When calculating total student loan debt at the time of refinancing, we assume:

- Students who completed their degrees in 2012 (2012 cohort) do not start payment on debt until 2013;
- Students who completed their degrees in 2016 (2016 cohort) do not start repayment until 2017;
- Students do not defer or default after they start loan payments;
- Students refinance in 2019;³⁵ and
- Students are refinancing from a standard federal repayment plan.³⁶

We estimate savings for each student population in this section based on the actual loan portfolio of a real student with a cumulative student loan balance close to the mean for each population.³⁷ The average annual percentage rate (APR) in the analysis reflects the weighted interest rate for the actual loans held by the student, rather than the average APR for the entire population.

We chose to not conduct our analysis with aggregate student loan information, as is used in [Section IV](#), because the various types of loans held by individual borrowers are partial substitutes and could overestimate

student loan debt. This could result in overestimating the savings from refinancing. For example, a student may take out an unsubsidized loan, with a higher APR, if he or she does not qualify for a subsidized loan with a lower APR. Aggregation may not create an accurate portrait of student debt.

Potential Savings from Refinancing

The potential savings from a state student loan program will depend on the interest rate and term length offered. Higher interest rates will increase the total loan payments because the student is paying more in interest on the loan. Longer term lengths will also increase total loan payment because the student is making smaller payments on the principal balance which extends the amount of time it takes to pay off the loans.

As stated previously, the interest rate for any loan refinancing program would be largely dictated by the market. We, therefore, show the potential savings for a range of typical interest rates and term lengths offered by other state programs. Each student population is analyzed separately.

We assume that students will refinance all or a portion of their student loan debt if their total payment is less than what they would have paid under their original loan. The total savings from refinancing is equal to the difference between the remaining total payment under standard repayment and the total payment when refinancing is possible.

We report the estimated total savings for 2-year undergraduates, 4-year undergraduates, graduate, and professional students separately. All savings and

³⁴ A full discussion of all loans included in WSAC's database and our analysis is in Appendix II.

³⁵ Students in the 2012 cohort would have made student loan payments for six years (72 payments). Students in the 2016 cohort would have made payments for two years (24 payments).

³⁶ This means that students must make a minimum payment of \$50 on most federal loans and are not benefiting from the use of an income based-repayment program.

³⁷ For a detailed description of how we chose the representative student, see Appendix II.

payment amounts are reported as nominal dollars, as is the convention in other student loan refinancing program analyses. Unlike [Section IV](#), we do not adjust for inflation over the period nor do we include discounting³⁸ in our estimates for savings. We do not believe that the use of nominal dollars substantively changes the trend of the results in this section.

Cohort Effect

Although individuals in the 2012 and 2016 cohorts have similar debt balances after graduation, the impact of refinancing differs for these two cohorts. Individuals in the 2012 cohort have higher interest rates on their original loans than comparable students in the 2016 cohort. As a result, there is a greater range of interest rates that will reduce total payments for the 2012 cohort.

On the other hand, students in the 2012 cohort have paid their student debt for four more years than students in the 2016 cohort. Refinancing to a 5-, 10- or 15-year loan will increase the term length for the 2012 cohort. The increase in total payment due to increases in term length will offset some of the benefits from lowering the interest rate. Students in the 2016 cohort will see a smaller increase in term length if they refinance to a 10- or 15-year loan. Students in the 2016 cohort will decrease their term length if they switch to a 5-year loan.

The difference in the number of payments students have made on their loans also affects whether they have the \$7,500 minimum debt required to refinance in 2019 according to our hypothetical state refinance program (recall [Exhibit 1](#) in [Section I](#) on the distribution of Washington student cumulative federal student loan debt). Students with less than \$5,000 in student loan debt in either the 2012 or 2016 cohort will not meet the minimum debt requirement for most state plans. Students in the 2016 cohort with less than \$10,000 and students in the 2012 cohort with less than \$20,000 in debt in are unlikely to have a debt balance high enough to qualify for refinancing in 2019.

³⁸ In other words, we do not adjust for the greater value of money in the present relative to the same amount of money the future.

Exhibit 12

Definitions of Terms

Cohort: Student cohorts are a group of students identified based on the year in which they likely completed their degree in a 2-year undergraduate, 4-year undergraduate, graduate, or professional program. We examine the 2012 and 2016 cohorts in [Section III](#). The inclusion criteria used to identify the cohorts are discussed in [Appendix II](#).

Original loan balance: Student loan balance at the beginning of the repayment period. This is equal to the total cumulative loan balance of all federal student loans taken out while the student was enrolled and all potential capitalized interest owed at the start of the first payment (which is assumed to be six months after graduation). Please note: 4-year student loan debt balance includes all undergraduate student debt. Graduate and professional student loan debt balance does not contain potential undergraduate student debt.

APR: The weighted average annual percentage rate for all student loans held by the student. Please note: this APR is different than the average APR reported in [Section IV](#) because it is the average APR for a specific representative student rather than the average across students.

Monthly payment: The total monthly payment made by the student on all of their federal student loans under a standard federal 10-year repayment plan (rounded to the nearest dollar).

Theoretical outstanding balance: Remaining principal balance in 2019, when the student would be eligible for refinancing through a hypothetical state program (rounded to nearest dollar).

Remaining total standard payments: Total nominal payments the student would make if they finished paying the original student loans under the standard federal repayment plan. This equals the total payment from 2019 to the end of the loan (rounded to the nearest dollar). This amount does not depend on the interest rate offered by the refinanced plan.

Total payments if refinanced: Total nominal payments the student would pay if given the option to refinance. If the student declines to refinance any student loans when given the option, then this number will equal the remaining total payments.

Total savings: This is equal to the difference between what the student would have paid under the standard repayment plan and what the student would pay when given the option to refinance (remaining total standard payments less total refinanced payments).

Term length: Duration of student loan repayment period.

2-Year College Students

Two-year college students at community and technical colleges have the smallest total cumulative loan balance of all four student populations and are the least likely to benefit from student loan refinancing. Of the 2-year students in the 2016 cohort, 40% have a student loan balance of less than \$10,000 at graduation. Of the students in the 2012 cohort, 80% have a student loan balance of less than \$20,000 at graduation. This means that roughly two out of five borrowers in the 2016 cohort and four out

of five borrowers in the 2012 cohort may not have a sufficient loan balance (at least \$7,500) in 2019 to qualify for refinancing under typical loan refinancing terms. Therefore, a majority of these students are unlikely to even qualify for student loan refinancing.

The total cumulative loan debt for a representative 2-year student in each of the two cohorts (2012 and 2016) is provided in [Exhibit 13](#) below.

Exhibit 13

Representative 2-Year Student Cumulative Loan Debt, by Cohort

| Cohort | Original loan balance | Average APR | Monthly payment | Theoretical outstanding balance (as of 2019) | Remaining total standard payments (as of 2019) |
|--------|-----------------------|-------------|-----------------|--|--|
| 2012 | \$13,025 | 5.6% | \$142 | \$6,089* | \$6,812 |
| 2016 | \$15,541 | 4.4% | \$160 | \$12,949 | \$15,376 |

Note:

* Average balance is below minimum required for refinancing.

[Exhibit 14](#) shows the potential savings for the representative 2-year students in the 2012 and 2016 cohorts. It is important to note that the average student in the 2012 cohort does not meet the minimum student loan balance requirement of a typical student loan refinancing program. This student's savings were included for comparison.

Although the 2012 cohort student has a higher average APR than the student in the 2016 cohort, this student is unlikely to save on total payments, regardless of the terms that can be offered by a state refinancing program. The 2-year student in the 2016 cohort has an expected savings of about \$1,000 under the most favorable terms (APR of 4.0%, term length of 5 years).

Exhibit 14

Estimated Savings from Refinancing for a Representative 2-Year Undergraduate Student, by Cohort

| Term length | APR | 2012 Cohort | | | APR | 2016 Cohort | | |
|-----------------|-------------|-----------------------------------|------------------------------|----------------|-------------|-----------------------------------|------------------------------|----------------|
| | | Remaining total standard payments | Total payments if refinanced | Total savings* | | Remaining total standard payments | Total payments if refinanced | Total savings* |
| Original | 5.6% (avg.) | \$6,812 | - | - | 4.4% (avg.) | \$15,376 | - | - |
| 5-year | 4.0% | \$6,812 | \$6,695 | \$117 | 4.0% | \$15,376 | \$14,309 | \$1,067 |
| | 6.0% | \$6,812 | \$6,812 nr | \$0 | 6.0% | \$15,376 | \$15,005 | \$370 |
| | 8.0% | \$6,812 | \$6,812 nr | \$0 | 8.0% | \$15,376 | \$15,313 | \$62 |
| 10-year | 4.0% | \$6,812 | \$6,812 nr | \$0 | 4.0% | \$15,376 | \$15,312 | \$64 |
| | 6.0% | \$6,812 | \$6,812 nr | \$0 | 6.0% | \$15,376 | \$15,376 nr | \$0 |
| | 8.0% | \$6,812 | \$6,812 nr | \$0 | 8.0% | \$15,376 | \$15,376 nr | \$0 |
| 15-year | 4.0% | \$6,812 | \$6,812 nr | \$0 | 4.0% | \$15,376 | \$15,376 nr | \$0 |
| | 6.0% | \$6,812 | \$6,812 nr | \$0 | 6.0% | \$15,376 | \$15,376 nr | \$0 |
| | 8.0% | \$6,812 | \$6,812 nr | \$0 | 8.0% | \$15,376 | \$15,376 nr | \$0 |

Notes:

* Total savings = Remaining total standard payments – Total payments if refinanced.

nr = student loans are not refinanced.

See Exhibit 12 on pg. 30 for term definitions.

4-Year College Students

Four-year college students hold a greater total cumulative loan balance, on average, than 2-year college students. As a result, a greater percentage will qualify for student loan refinancing. About 20% of 4-year students in the 2016 cohort have a student loan balance of less than \$10,000 at graduation. About half of students in the 2012 cohort have a student loan balance of less than \$20,000 at graduation. This means

that roughly one out of five borrowers in the 2016 cohort and half of borrowers in the 2012 cohort may not have enough loan balance (at least \$7,500) in 2019 to qualify for refinancing under typical loan refinancing terms.

The total cumulative loan debt for a representative 4-year student in each of the two cohorts (2012 and 2016) is provided in [Exhibit 15](#) below.

Exhibit 15

Representative 4-Year Student Cumulative Loan Debt, by Cohort

| Cohort | Original loan balance | Average APR | Monthly payment | Theoretical outstanding balance (as of 2019) | Remaining total standard payments (as of 2019) |
|--------|-----------------------|-------------|-----------------|--|--|
| 2012 | \$21,792 | 5.4% | \$235 | \$10,132 | \$11,295 |
| 2016 | \$22,890 | 4.3% | \$235 | \$19,058 | \$22,536 |

Exhibit 16

Estimated Savings from Refinancing for a Representative 4-Year Undergraduate Student, by Cohort

| Term length | 2012 Cohort | | | | 2016 Cohort | | | |
|-----------------|-------------|-----------------------------------|------------------------------|----------------|-------------|-----------------------------------|------------------------------|----------------|
| | APR | Remaining total standard payments | Total payments if refinanced | Total savings* | APR | Remaining total standard payments | Total payments if refinanced | Total savings* |
| Original | 5.4% (avg.) | \$11,295 | - | - | 4.3% (avg.) | \$22,536 | - | - |
| 5-year | 4.0% | \$11,295 | \$11,087 | \$208 | 4.0% | \$22,536 | \$21,059 | \$1,477 |
| | 6.0% | \$11,295 | \$11,295 nr | \$0 | 6.0% | \$22,536 | \$22,107 | \$429 |
| | 8.0% | \$11,295 | \$11,295 nr | \$0 | 8.0% | \$22,536 | \$22,536 nr | \$0 |
| 10-year | 4.0% | \$11,295 | \$11,295 nr | \$0 | 4.0% | \$22,536 | \$22,536 nr | \$0 |
| | 6.0% | \$11,295 | \$11,295 nr | \$0 | 6.0% | \$22,536 | \$22,536 nr | \$0 |
| | 8.0% | \$11,295 | \$11,295 nr | \$0 | 8.0% | \$22,536 | \$22,536 nr | \$0 |
| 15-year | 4.0% | \$11,295 | \$11,295 nr | \$0 | 4.0% | \$22,536 | \$22,536 nr | \$0 |
| | 6.0% | \$11,295 | \$11,295 nr | \$0 | 6.0% | \$22,536 | \$22,536 nr | \$0 |
| | 8.0% | \$11,295 | \$11,295 nr | \$0 | 8.0% | \$22,536 | \$22,536 nr | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments – Total payments if refinanced

See Exhibit 12 on pg. 30 for term definitions.

Exhibit 16 shows the potential savings for an average 4-year student in each of the 2012 and 2016 cohorts. Like the 2-year undergraduate students, the 4-year students are unlikely to benefit from 10-year and 15-year refinanced loan term lengths.

Graduate Students

Most graduate students will have sufficient total debt to meet the minimum \$7,500 balance to refinance their loans, even in the 2012 cohort. About 5% of graduate students in the 2016 cohort have a student loan balance of less than \$10,000 at graduation. About 10% of graduate students in the 2012 cohort have a student loan balance of less than \$20,000 at graduation. This means that over 90% of graduate students will be able to benefit from refinancing, even in some of the earlier cohorts.

The total cumulative loan debt for a representative graduate student in each of the two cohorts (2012 and 2016) is provided in [Exhibit 17](#) below.

Exhibit 17

Representative Graduate Student Cumulative Loan Debt, by Cohort

| Cohort | Original loan balance | Average APR | Monthly payment | Theoretical outstanding balance (as of 2019) | Remaining total standard payments (as of 2019) |
|--------|-----------------------|-------------|-----------------|--|--|
| 2012 | \$59,579 | 7.0% | \$692 | \$28,872 | \$33,179 |
| 2016 | \$61,365 | 5.8% | \$676 | \$51,761 | \$64,849 |

Exhibit 18 shows the potential savings for a representative graduate student in each of the 2012 and 2016 cohorts. Graduate students have a greater range of potential savings than undergraduates due to their higher average interest rate and loan balance. These students will save money on a wider range of interest rates and term lengths.

The representative graduate student in the 2012 cohort would have comparable total savings to undergraduate students in the 2016 cohort. However, unlike the

representative undergraduate students, this student would be able to save some money on student loans even if the state were only able to offer an interest rate of 6.0% instead of 4.0% on a 5-year loan.

The representative 2016 graduate student is even more likely to save when refinancing. The total payment for this student would be reduced even if the state were only able to offer an interest rate of 8.0% on a 5-year loan. Unlike the undergraduate student, this student could also reduce his total payment with a 10-year loan.

Exhibit 18

Estimated Savings from Refinancing for Representative Graduate Student, By Cohort

| Term length | 2012 Cohort | | | | 2016 Cohort | | | |
|-----------------|-------------|-----------------------------------|------------------------------|----------------|-------------|-----------------------------------|------------------------------|----------------|
| | APR | Remaining total standard payments | Total payments if refinanced | Total savings* | APR | Remaining total standard payments | Total payments if refinanced | Total savings* |
| Original | 7.0% (avg.) | \$33,179 | - | - | 5.8% (avg.) | \$64,849 | - | - |
| 5-year | 4.0% | \$33,179 | \$31,903 | \$1,276 | 4.0% | \$64,849 | \$57,195 | \$7,654 |
| | 6.0% | \$33,179 | \$33,114 | \$65 | 6.0% | \$64,849 | \$60,041 | \$4,809 |
| | 8.0% | \$33,179 | \$33,179 nr | \$0 | 8.0% | \$64,849 | \$62,971 | \$1,878 |
| 10-year | 4.0% | \$33,179 | \$33,179 nr | \$0 | 4.0% | \$64,849 | \$62,886 | \$1,963 |
| | 6.0% | \$33,179 | \$33,179 nr | \$0 | 6.0% | \$64,849 | \$64,849 nr | \$0 |
| | 8.0% | \$33,179 | \$33,179 nr | \$0 | 8.0% | \$64,849 | \$64,849 nr | \$0 |
| 15-year | 4.0% | \$33,179 | \$33,179 nr | \$0 | 4.0% | \$64,849 | \$64,849 nr | \$0 |
| | 6.0% | \$33,179 | \$33,179 nr | \$0 | 6.0% | \$64,849 | \$64,849 nr | \$0 |
| | 8.0% | \$33,179 | \$33,179 nr | \$0 | 8.0% | \$64,849 | \$64,849 nr | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments – Total payments if refinanced.

See Exhibit 12 on pg. 30 for term definitions.

Professional Students

Professional students have the most to gain from a student loan refinancing program. These students have the highest student loan debt and relatively high-interest rates. Most professional students will have

sufficient loan balance to refinance, even in the 2012 cohort.

The total cumulative loan balance for a representative professional student in each of the two cohorts (2012 and 2016) is provided in [Exhibit 19](#) below.

Exhibit 19

Representative Professional Student Cumulative Loan Debt, by Cohort

| Cohort | Original loan balance | Average APR | Monthly payment | Theoretical outstanding balance (as of 2019) | Remaining total standard payments (as of 2019) |
|--------|-----------------------|-------------|-----------------|--|--|
| 2012 | \$97,124 | 7.1% | \$1,133 | \$47,206 | \$54,369 |
| 2016 | \$129,995 | 6.3% | \$1,466 | \$110,128 | \$140,752 |

Exhibit 20 shows the potential savings for an average professional student in each of the 2012 and 2016 cohorts. These students have a similar savings pattern as graduate students. However, they are likely to benefit much more from refinancing due to their larger initial loan balance. Professional

students in the 2012 cohort have the potential to save more under refinancing than undergraduates in the 2016 cohort. Professional students in the 2016 cohort can save almost \$20,000 if given the most favorable terms.

Exhibit 20

Estimated Savings from Refinancing for Representative Professional Student, by Cohort

| Term length | 2012 Cohort | | | | 2016 Cohort | | | |
|-----------------|-------------|-----------------------------------|------------------------------|----------------|-------------|-----------------------------------|------------------------------|-----------------|
| | APR | Remaining total standard payments | Total payments if refinanced | Total savings* | APR | Remaining total standard payments | Total payments if refinanced | Total savings* |
| Original | 7.1% (avg.) | \$54,369 | - | - | 6.3% (avg.) | \$140,752 | - | - |
| 5-year | 4.0% | \$54,369 | \$52,162 | \$2,207 | 4.0% | \$140,752 | \$121,691 | \$19,061 |
| | 6.0% | \$54,369 | \$54,244 | \$125 | 6.0% | \$140,752 | \$127,745 | \$13,006 |
| | 8.0% | \$54,369 | \$54,369 nr | \$0 | 8.0% | \$140,752 | \$133,980 | \$6,771 |
| 10-year | 4.0% | \$54,369 | \$54,369 nr | \$0 | 4.0% | \$140,752 | \$133,800 | \$6,952 |
| | 6.0% | \$54,369 | \$54,369 nr | \$0 | 6.0% | \$140,752 | \$140,752 nr | \$0 |
| | 8.0% | \$54,369 | \$54,369 nr | \$0 | 8.0% | \$140,752 | \$140,752 nr | \$0 |
| 15-year | 4.0% | \$54,369 | \$54,369 nr | \$0 | 4.0% | \$140,752 | \$140,752 nr | \$0 |
| | 6.0% | \$54,369 | \$54,369 nr | \$0 | 6.0% | \$140,752 | \$140,752 nr | \$0 |
| | 8.0% | \$54,369 | \$54,369 nr | \$0 | 8.0% | \$140,752 | \$140,752 nr | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments – Total payments if refinanced.

See Exhibit 12 on pg. 30 for term definitions.

Summary of Potential Savings

A state student loan refinancing program would award the greatest benefits to professional students, graduate students, students with private loans, and students with recent student loan debt.

Undergraduate students in older cohorts are unlikely to have sufficient remaining federal student loan balances to receive significant debt relief from refinancing.

[Exhibit 21](#) outlines the total savings over the lifetime of the loan if the representative students in the 2016 cohort were to refinance to a 5-year loan. We focus on a 5-year loan term because it provides all populations of students at least some chance at reducing their total payments, depending on the interest rate.

Undergraduates would see a reduction in total payment of less than \$2,000. The 2-year undergraduate student would see a reduction in total payments of \$1,477 if refinancing to a 5-year loan with a 4.0% APR (the most favorable terms examined). The 4-year undergraduate would see a reduction in total payments of \$909.

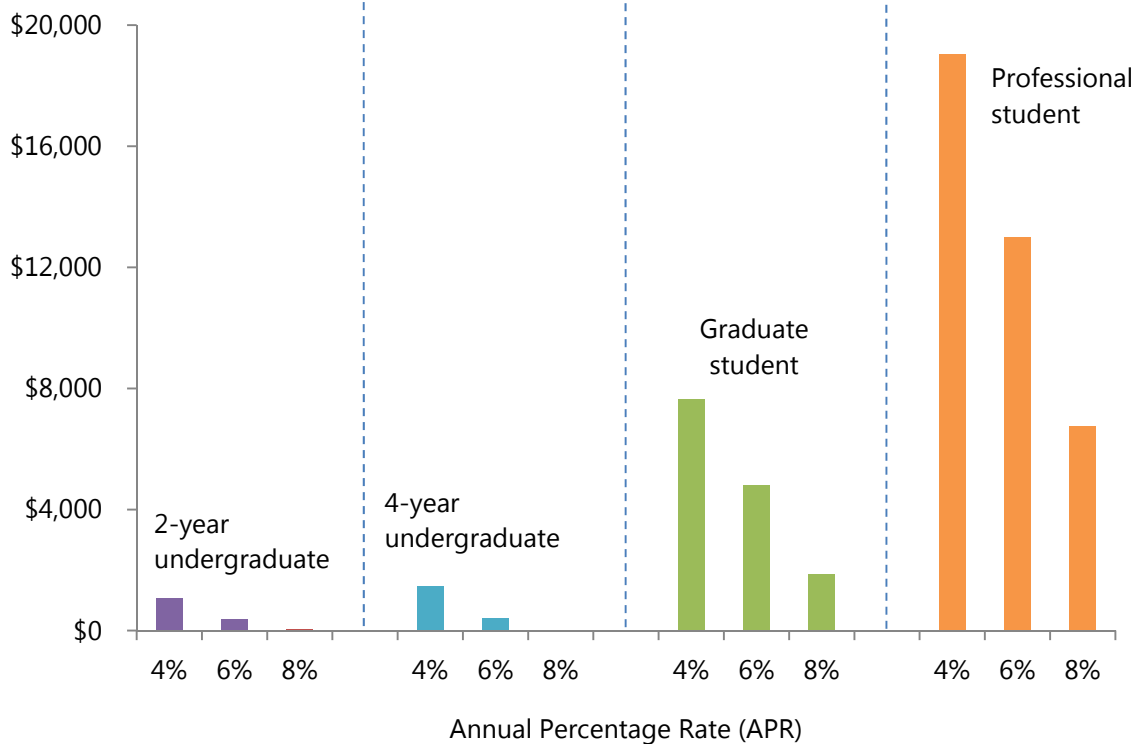
By contrast, graduate students would see substantial savings from refinancing. The graduate student would save \$7,654 and the professional student would save \$19,061 by refinancing to a 5-year loan with a 4.0% APR.

The substantial difference in savings between the student types is due to undergraduates having lower average interest rates on their primary loans as well as the substantial difference in the average initial loan balance held by undergraduate and graduate/professional students. For example, the theoretical outstanding balance for the professional student is over six times as large as the theoretical outstanding balance for the 4-year undergraduate in 2019.

The total savings from refinancing to a 5-year term is driven by a reduction in the term length in addition to potential decreases in the interest rate. The reduction in term length will cause an increase in monthly payments, which in some instances may be substantial. [Appendix II](#) estimates the corresponding change in monthly payments for each of the student types (2-year, 4-year, graduate, and professional).

Exhibit 21

Potential Total Savings from Refinancing to 5-Year Loan for Representative Students



Limitations

Major limitations of this analysis stem from being unable to observe key information about Washington student borrowers. This includes their private student loan debt, their borrower characteristics (as outlined in [Exhibit 10](#) in [Section II](#)), and their repayment histories.

Borrower Characteristics

We were unable to obtain information about key borrower characteristics used to determine eligibility in other state refinancing programs, such as information on credit score or debt-to-income ratio. As a result, we cannot speak to whether the representative student would actually qualify for a loan, or what the typical loan balance would be for students who would qualify to refinance. For example, we estimate that a representative 2-year student who completed his or her degree in 2016 could potentially save \$1,477 by refinancing to a 5-year term with an APR of 4.0%. However, we do not know whether that individual would have the requirements (e.g., a high enough credit score or low enough debt-to-income ratio) to qualify for those terms.

Repayment History

A critical assumption of this section is that students make standard student loan repayments. However, students may pay back their loans in a variety of ways. They may take advantage of federal income-based repayment plans (which would alter their monthly and total payments), or they may default or defer payment for a period of time (which would increase the period of time that refinancing could be beneficial to students). They may also pay back more than the standard repayment amount (which would reduce the benefit of refinancing). The actual benefits from refinancing could change dramatically based on these choices. We discuss the value of alternative federal repayment options in [Section IV](#).

Private Student Loans

Another major limitation of this analysis is our inability to observe the amounts and terms of students' private loans in the WSAC data.³⁹ In our interviews with other state programs (see [Section II](#)), we learned that private student loans are frequently refinanced because they have higher original interest rates than those offered by the refinance programs.

³⁹ WSAC began collecting information private student loans for the 2012-13 school year. Prior to 2012-13 WSAC did not collect data on non-federal loans. Instead, private student loan data was included in a broad category with institutional loans and other agency loans. After 2012, WSAC began receiving institutional and other private student loan information for students receiving need-based aid only. However, this data may be incomplete as students may not report all of their private student loans to their colleges/universities. Additionally, students receiving need-based aid may differ systematically from students not receiving need-based aid in relation to both the size of their private student loan debt and the specific terms of those loans.

National data shows that about 29% of undergraduates who completed their degrees in the 2011-12 school year had private student loans with an average cumulative balance of around \$15,000.⁴⁰ Additionally, the Consumer Financial Protection Bureau estimated that the actual 20-year variable APR paid by the average private student loan borrower in 2011 was above the 6.8% available from the federal government via Stafford Loans.⁴¹ Borrowers with the highest credit score would have paid less than the federal interest rate on their loans. However, students with the highest rates would have paid between 13% and 20% interest.⁴²

This represents a potentially large market for student loan refinancing. Other states have estimated the size of the private student market in their states by partnering with a credit bureau or private marketing firm.

Limited Scope of This Report

This section of the report is limited to estimating the potential savings to different student populations from refinancing their federal loans under a range of term lengths and APRs.

We cannot speak to whether the state would be able to offer an interest rate low enough to reduce total payments for

⁴⁰ National Center for Education Statistics. (2016). [See table 331.95](#)—Percentage of undergraduate students ages 18 to 24 in their 4th (senior) year or above who ever received federal loans, nonfederal loans, or Parent Loans for Undergraduate Students (PLUS), and average cumulative amount borrowed, by selected student characteristics and control and level of institution: 1989-90, 1999-2000, and 2011-12.

⁴¹ Consumer Financial Protection Bureau. (2012) [Private Student Loans Report](#), pg. 16.

⁴² Ibid.

students. Our analysis is based on a range of interest rates currently offered by existing student loan refinancing programs. A new student loan refinancing program may have more difficulty providing competitive student loan interest rates to previous graduates because interest rates are expected to rise in the near term.⁴³

We also cannot speak to whether students would actually choose to refinance through a state program. We predict that professional and graduate students would have the largest potential savings. However, our conversations with other states (see [Section II](#)) suggest that these students are targeted by private student loan refinancing programs. To encourage these students to refinance through a hypothetical state program, Washington would need to make sure the program not only offered relief from the students' current plan but also offered competitive terms in relation to private refinancing options.

A complete market study and cost analysis would be necessary to determine whether it would be financially feasible to create a state refinancing program that would be competitive against other state and private student loan refinancing programs. Those analyses are beyond the scope of our assignment

⁴³ Sections 455(b)(8)(A) through (C) of the Higher Education Act of 1965, as amended, state that the interest rates for Federal Direct Stafford Loans and Federal Direct Unsubsidized Stafford Loans are set with formulas based on the bond equivalent rate of 91-day Treasury Bills. The United States rate on Treasury Bills reached an unprecedented low from November 2008 to 2016, when students in the 2012 and 2016 cohorts borrowed most of their student loans. See Board of Governors of the Federal Reserve System (US), 3-Month Treasury Bill: Secondary Market Rate [TB3MS], retrieved from FRED, Federal Reserve Bank of St. Louis). It is therefore unlikely that interest rates will be lower in the future.

IV. Foregone Federal Loan Program Benefits

This section of the report satisfies part (e) of the legislative assignment (see page 2) by considering the value of repayment and forgiveness options that may be lost to a borrower of a federal student education loan(s) who chooses to refinance.

In the previous section, [Section III](#), we compare the total loan repayment costs for borrowers who refinanced under a hypothetical state refinancing program to the costs the same borrowers would incur under the standard federal repayment plan. In [Section III](#), we do not take into account other federal program benefits, for example, alternative federal repayment plans or loan forgiveness. That approach potentially overstates the benefits of refinancing federal loans for a subset of borrowers who would choose to participate in an income-driven repayment plan or who would qualify for loan forgiveness.

In this section of the report, we consider the value of those federal lending program benefits in the following way. We first provide an overview of federal repayment plans and debt forgiveness programs. We then estimate the relative value of federal repayment plans compared to a hypothetical state refinance plan. Finally, we provide an overview of federal forbearance and deferment programs.

[Federal Loan Repayment Programs](#)

As discussed in [Section III](#), the standard federal repayment plan requires borrowers to make fixed monthly payments that will pay off their federal loans in ten years. Borrowers also have the opportunity to enroll in an alternative repayment plan, either by initially selecting an alternative plan or by switching plans at a later point. Instead of the standard plan, borrowers can select a repayment plan in which:

- Payments are initially lower but increase over time;
- The debt is repaid over a longer time period; or
- Monthly payments depend on the borrower's discretionary income.

Borrowers participating in income-driven repayment (IDR) plans potentially qualify for loan forgiveness. [Exhibit 22](#) displays borrower eligibility, loan eligibility, repayment terms, and forgiveness eligibility for the major federal loan repayment programs.

[Borrower Eligibility](#)

Borrower eligibility for some programs depends on what kinds of federal loans the borrower has and when the borrower first borrowed. Consequently, not all federal repayment programs are available for all borrowers.

Loan Eligibility

All types of federal loans are eligible for non-IDR plans. For the newest and most popular IDR plans, though, only loans from the Federal Direct Lending Program are eligible.⁴⁴

Repayment Terms

For the standard, graduated, and extended repayment plans, repayment schedules are determined such that the balance of the loan will be repaid in full within a pre-determined period of time. For standard and graduated plans, loan balances are scheduled to be paid in full after 120 monthly payments. Monthly payments in the graduated plan are smaller at the beginning and increase gradually over time. For the extended repayment plan, the loan is repaid over a longer time period, up to 25 years. For each of these three repayment schedules, larger loan balances require larger monthly payments.

Forgiveness in IDR Plans

Income-driven repayment plans, in addition to allowing recent graduates with lower incomes to make smaller monthly loan payments, also potentially offer borrowers loan forgiveness. IDR plans use borrower income to determine a borrower's monthly payment. This means there is no mathematical guarantee that a loan will be fully repaid within a pre-determined period of time. In order for a loan to be repaid, borrowers must consistently make payments at least as large as the interest that accrued on the loan during the same time period. If a borrower's monthly payment is less than their monthly accrued

interest, the total balance owed on the loan will be higher at the end of the month than it was at the beginning.

IDR plans forgive the remaining loan balance for borrowers who reach the threshold of making a certain number of payments towards their loan. A borrower can receive loan forgiveness if he or she meets payment requirements (which vary by program). Each program requires borrowers a) make a monthly payment of at least 10% of their discretionary income⁴⁵ and b) make monthly payments for 10-25 years (depending on the type of loan and a borrower's occupation). Unless the borrower is eligible for the Public Service Loan Forgiveness (PSLF) Program,⁴⁶ forgiven loan balances are subject to income tax, which can lead to a large income tax burden in the year when the loan is forgiven.

Participation in income-driven repayment plans has grown rapidly in recent years. In the fall of 2012, before the Pay As You Earn (PAYE) IDR program was signed into law,⁴⁷ approximately 5% of federal loan borrowers were enrolled in an IDR plan. In the fall of 2016, the proportion was 20%.⁴⁸

⁴⁴ See pg. 7 in Section I for a discussion of how the FFEL Program was replaced by the William D. Ford Direct Loan Program. Stafford loans were made through the former program, and Direct loans were made through the latter.

⁴⁵ Discretionary income takes into account the income of a borrower's spouse if they file taxes jointly.

⁴⁶ The Public Service Loan Forgiveness Program (PSLF) forgives outstanding loan balances for borrowers working for a qualified employer after 120 monthly payments have been made under a qualified repayment plan. PSLF is discussed further on pg. 45.

⁴⁷ [34 CFR 685.209](#) Income-contingent repayment plans.

⁴⁸ Furman, J. & Black, S. (2016, April 28). [Six recent trends in student debt](#). The White House [blog post].

Exhibit 22

Federal Student Loan Repayment Programs

| Repayment plan | Borrower eligibility | Loan eligibility | Repayment terms |
|--|---|------------------------------------|---|
| Conventional loan repayment plans | | | |
| Standard | All | Direct Stafford PLUS | Fixed payment for ten years. |
| Graduated | All | Direct Stafford PLUS | Payments increase gradually. Paid off in ten years (or longer for consolidation). |
| Extended | All | Direct Stafford PLUS | Payments fixed or graduated. Paid off within 25 years. |
| Income-driven repayment (IDR) plans | | | |
| Pay As You Earn (PAYE) | New borrower after Oct. 1, 2007. Direct loan disbursement after Oct 1, 2011. High loan debt relative to income. | Direct Student PLUS | Payments set at 10% of discretionary income, but not more than borrower would have paid under 10-year standard plan. Outstanding balance forgiven after 20 years. |
| Revised Pay As Your Earn (REPAYE) | All (FFEL borrowers only eligible through direct loan consolidation) | Direct Student PLUS | Payments set at 10% of discretionary income, recalculated annually. Spouse's loan debt and income are considered. Outstanding balance forgiven after 20 years (for undergrad loans) or 25 years (if any loans were for graduate study). |
| 2009 Income-based repayment | High debt relative to income | Direct Stafford Student PLUS | Payments set at 15% of discretionary income, but not more than borrower would have paid under 10-year standard plan. Outstanding balance forgiven after 25 years. |
| 2014 Income-based repayment | Took out first loan on/after July 1, 2014. High debt relative to income. | Direct Student PLUS | Payments set at 10% of discretionary income, but not more than borrower would have paid under 10-year standard plan. Outstanding balance forgiven after 20 years. |
| Income-contingent repayment (ICR) | All | Direct Student PLUS | Payments set at 20% discretionary income, but not more than borrower would have paid on 12-year income-adjusted fixed repayment plan. Outstanding balance forgiven after 25 years. |

Note:

Sources: [U.S. Department of Education. *Understanding repayment plans*](#) and [U.S. Department of Education. *Income-Driven Plans*](#).

Federal Loan Forgiveness Programs

In addition to loan forgiveness available to borrowers enrolled in an IDR plan, the federal government also offers loan forgiveness in fewer than 20 years to borrowers in qualifying occupations.

The broadest loan forgiveness program is the Public Service Loan Forgiveness Program (PSLF), which forgives outstanding loan balances for borrowers working for a qualified employer after 120 monthly payments have been made under a qualified repayment plan. Borrowers are eligible on the basis of working for a:

- Government organization (including the military),
- 501(c)(3) tax-exempt not-for-profit organization, or
- Certain other not-for-profit organizations that provide public services.

The PSLF Program was established in 2007, which means that few borrowers have actually had sufficient time to make the required 120 to qualify for forgiveness. As of September 2018, more than 25,000 have applied for loan forgiveness but only 96 have received it.⁴⁹ The long-term viability of the PSLF Program has been questioned,⁵⁰ and the management of the program has been criticized,⁵¹ but recent legislation and funding indicate that in the near term it will

continue to be available to eligible borrowers.⁵²

Other federal programs offer loan forgiveness conditional on the completion of a certain number of years of employment in specific occupations. Teachers, nurses, and other health professionals who work for a qualifying organization—typically organizations serving individuals in high-needs or difficult-to-staff areas—are all eligible for some amount of loan forgiveness, whose terms can be more generous than the PSLF Program. Some branches of the military, such as the U.S. Army, National Guard, and Coast Guard, offer loan repayment programs as well.

Until its non-renewal in 2017, the Federal Perkins Loan Program offered subsidized loans for undergraduate and graduate education on the basis of financial need. Perkins Loans are eligible for forgiveness through public service.⁵³

[Exhibit A13](#), in the [Appendix](#), provides additional details about these programs.

⁴⁹ U.S. Department of Education. (2018, September 19). [Federal student aid posts new reports to FSA data center](#) [press release].

⁵⁰ Kamenetz, A. (2017, August 2). [New fears for public service loan forgiveness](#). *National Public Radio*.

⁵¹ Government Accountability Office. (2018). [Public service loan forgiveness: Education needs to provide better information for the loan servicer and borrower](#) (GAO-18-547). Washington, DC.

⁵² U.S. Department of Education. (2018, May 23). U.S. [Department of Education announces opportunity for federal student loan borrowers to be reconsidered for public service loan forgiveness](#) [press release].

⁵³ For public servants, teachers, and borrowers serving in the military, approximately 20% of the original principal loan amount (plus accruing interest) on Perkins Loans is forgiven per year of service.

Estimating the Value of Income-Driven Repayment (IDR)

This section of the report estimates the relative value to borrowers of federal income-driven repayment plans compared to the value of a hypothetical state refinance plan. We only examine the value of repayment plans here and discuss federal deferment and forbearance programs in the next section.

"Savings" vs. "Value"

Note that we focus on the *value* of federal repayment plans and a hypothetical state refinance program in this section. This approach differs from [Section III](#), which focuses on borrower "savings" for state-based refinancing compared to repayment through the standard federal plan. "Savings" is the difference between repayment plans in nominal dollars (i.e., unadjusted dollars).

In contrast, in [Section IV](#) we focus on the "value" of IDR. "Value" is defined as the difference in constant-dollar (i.e., adjusted dollar) payments between a federal IDR plan and a typical state-based refinancing plan.

In this section, we compare the value of repayment plans that vary considerably on the number of payments that borrowers must make and the size of those payments at different points in time. For example, we assume that an individual in the hypothetical state plan makes equal payments over ten years, while an individual in one of the federal IDR plans may make payments that gradually increase over a repayment period of 10-25 years.

To accurately compare the value of these payment plans, we adjust for inflation and

assume that borrowers have a moderate preference for dollars in the present compared to the same dollar amount in the future (i.e., apply a discount rate). For example, all else being equal, our approach assumes that the obligation to repay \$20,000 in 2033 is preferable to the obligation to repay \$20,000 in 2023.

We also incorporate individual income and eligibility for the PSLF program into the calculation of the value of different IDR plans.

Consequently, the analyses in [Section IV](#) (compared to [Section III](#)) rely on different data, different assumptions, and different methodological conventions when necessary.

Methodology

For each repayment plan available to a borrower, we first calculate the required payments that the borrower would need to make to fulfill the repayment obligation. Second, we account for inflation and borrower preference for dollars in the present by putting all payments in constant dollars (we use 2013 dollars).⁵⁴ Third, we add up all of the constant-dollar payments—the resulting sum is the "value" of the payments.

Finally, after the value of payments for each plan is calculated, we compare the value of the payments required to repay through the best available federal IDR program to the value of the payments required to repay through a typical state loan refinancing

⁵⁴ We use 2013 dollars because our data on borrower income was reported in 2013, and loan amounts were also approximately reported in 2013 dollars. Borrowers who finished their degrees in 2012 received a six-month grace period before federal loan repayment needed to begin.

program. The best available payments plans are nearly always the PAYE or REPAYE plans (see [Exhibit 22](#)). We assume that the typical state refinancing program offers refinancing at 6.0% APR for a 10-year term.

The total amount of payments that an individual will owe under a federal IDR plan is affected by his or her income and whether he or she qualifies for the Public Service Loan Forgiveness Program.

The greater his or her discretionary income, the larger the payments he or she will make under an IDR plan. For high-income individuals, the IDR plan may have less value compared to refinancing.

Similarly, qualification for the PSLF Program also affects an individual's valuation of a federal IDR plan. If an individual can qualify to have his or her debt forgiven through the PSLF Program, then he or she may pay less under an IDR plan due to forgiveness.

Population

We focus only on undergraduate and graduate/professional students who completed their degrees in 2012. This enables us to observe individual earnings and employment sector for several years after graduation. Public sector employees are eligible for the PSLF Program. The analysis focuses on the value of repayment plans to borrowers before they

had made any loan payments. This differs from [Section III](#), where we estimate the future savings for borrowers in 2019. [Exhibits 24](#) and [25](#) show how a borrower's income and eligibility for PSLF affect the value of IDR. The terms used in the tables are defined in [Exhibit 23](#). We conduct separate analyses for undergraduate and graduate borrowers from the 2012 cohort because average federal loan debt and loan interest rates vary considerably between these groups.

We combine 2- and 4-year undergraduates in [Exhibit 24](#) and graduate and professional students in [Exhibit 25](#) because each grouping similarly values IDR plans compared to refinancing after accounting for income and PSLF eligibility.

Assumptions

In order to determine the value of payments that individuals make under different repayment plans, we make a number of assumptions regarding the amount of their student loan debt, the interest rate on that debt, their employment behavior, their individual discount rate, their annual rate of salary increases, their eligibility for PSLF programs, etc.

For a discussion of these assumptions and results under some alternative assumptions, see [Appendix III](#).

Overall, the numbers in [Exhibits 24 and 25](#) are cautious estimates of the value of federal loan repayment options.⁵⁵ The number of borrowers who would not benefit from refinancing federal loans is likely greater than [Exhibit 24](#) suggests. For example, Washington State offers its own loan forgiveness programs for licensed health care providers who work for at least two years at an eligible site.⁵⁶ These

programs, one of which is funded jointly by the state and federal governments, offer forgiveness terms that are more generous for some borrowers compared to the federal programs we looked at in this section (see [Exhibit A14](#) in the [Appendix](#)).

Exhibit 23

Definitions of Terms

Value of IDR payments: The sum of all payments needed to repay the total student debt under the best available federal repayment plan available to the student (expressed in adjusted 2013 dollars).

Value of refinance payments: The sum of all payments needed to repay the total student debt under a hypothetical state repayment plan that assumes a 6.0% APR and 10-year term (expressed in adjusted 2013 dollars).

Difference in value of payments: The difference between the value of IDR payments and the value of refinance payments. If positive, it shows the borrower receives more value from refinancing than from a federal IDR plan. If negative, it shows that the borrower gains a greater value from paying their loans through an IDR plan rather than refinancing.

2013 income: The amount of income the individual borrower was earning upon completing his/her degree.

PSLF-eligible borrower: An individual who qualifies for loans forgiven under the Public Service Loan Forgiveness (PSLF) Program after making 120 qualifying payments. All graduates with federal loan debt working in the public sector or an eligible non-profit can potentially qualify for this program.

PSLF-ineligible borrower: An individual who does not qualify for loan forgiveness through the PSLF Program. We assume that all individuals working in the private sector do not qualify for this program.

⁵⁵ Appendix Exhibit A12 estimates the value of IDR and refinancing under less cautious assumptions about the value of refinancing.

⁵⁶ See [Washington State Student Achievement Council information on health professionals](#).

Exhibit 24

Value of Income-Driven Repayment (IDR) Versus Refinancing: 2012 Undergraduate Degree Completers

| 2013 income | PSLF-eligible borrower | | | PSLF-ineligible borrower | | |
|----------------|-----------------------------|-----------------------------------|--|-----------------------------|-----------------------------------|--|
| | Value of IDR payments | Value of refinance payments | Difference in value of payments [*] | Value of IDR payments | Value of refinance payments | Difference in value of payments [*] |
| \$10,000 | \$0 | \$17,700 | (\$17,700) | \$0 | \$17,700 | (\$17,700) |
| \$20,000 | \$3,500 | \$17,700 | (\$14,200) | \$10,200 | \$17,700 | (\$7,500) |
| \$30,000 | \$13,000 | \$17,700 | (\$4,700) | \$17,300 | \$17,700 | (\$400) |
| \$40,000 | \$17,300 | \$17,700 | (\$400) | \$17,300 | \$17,700 | (\$400) |
| \$50,000 | \$17,300 | \$17,700 | (\$400) | \$17,300 | \$17,700 | (\$400) |
| \$60,000 | \$17,300 | \$17,700 | (\$400) | \$17,300 | \$17,700 | (\$400) |

Notes:

* Difference in value of payments = Value of IDR payments - Value of refinance payments

All values are in 2013 dollars, rounded to the nearest \$100, and reflect a borrower discount rate of 3% and 2.4% annual inflation. We assume all borrowers have the 2013 median Washington cumulative federal loan debt amount (\$17,100) with an associated APR of 5.5% for a borrower completing a bachelor's degree. The values of the IDR payments are calculated based on the best available federal IDR plan. The values of the refinance payments are calculated under a hypothetical state program with a loan term of 10 years and APR of 6.0%. Additional methodological details are in Appendix III. See Exhibit 23 on pg. 48 for term definitions.

Undergraduate Student Analysis

Exhibit 24 shows our estimates of the difference in value between a federal IDR plan versus a typical state-based refinance program for undergraduate degree completers.

We provide separate estimates for PSLF-eligible borrowers (public sector employees) and PSLF-ineligible borrowers (private sector employees) and for individuals who have different levels of income following their degree completion in 2013. We report only on individuals with income levels between \$10,000 and \$60,000 because valuation of the payment plans is relatively constant beyond this level of income.

Irrespective of income or sector of employment, we used the median cumulative federal loan debt for a borrower

completing a bachelor's degree (\$17,100), and assumed an APR of 5.5%.⁵⁷ Actual loan debt varies considerably across students, but the average loan debt is generally similar across income levels (Exhibits A19 and A20).

The "Value of IDR payments" columns contain the sum of the discounted payments that the borrower would need to make to repay their federal loans through the most favorable IDR plan for which they qualify.⁵⁸ The "Value of refinance payments"

⁵⁷ The mean cumulative federal loan debt for a WA borrower completing a bachelor's degree in 2012 was \$19,045. Borrowers completing degrees from 2-year colleges tended to borrow less (Exhibit A1). Cumulative borrowing statistics differ from previous sections because our data source linking income to borrowing did not include borrowers earning degrees from private colleges. We use the WSAC loan data for the sample of individual 2012 graduates to estimate average APR.

⁵⁸ Technically, we compared state-based repayment to all federal repayment options. Given our assumptions, IDR was the most desirable federal repayment plan unless one

columns contain the sum of the discounted payments that the borrower would need to make to repay their federal loans through a hypothetical state program with a ten-year term and 6.0% APR. The “Difference in value of payments” column is the difference between these two amounts. It estimates the potential value that an individual borrower would achieve with a federal IDR plan compared to state refinancing.

[Exhibit 24](#) shows that, regardless of income or PSLF eligibility, an undergraduate borrower with a median level of federal debt at an APR of 5.5% would be worse off refinancing their loans through a typical state-based program.

However, the value that individuals gain from federal IDR plans does vary by income and PSLF eligibility. For borrowers earning \$20,000 or less, an IDR plan is at least \$7,500 more valuable than refinancing. For borrowers with income above \$30,000, the value of an IDR plan plateaus at \$400.

For individuals making \$30,000 or more at the assumed level of student loan debt, the required payments under the most common IDR plans are the same size as those made under a standard federal repayment plan.⁵⁹ These borrowers still benefit from remaining in a federal repayment plan rather than refinancing because they retain an APR of 5.5% on their existing loans rather than refinancing into a higher APR of 6.0%

assumed a borrower discount rate of at least 4.5%. [IDR program eligibility was determined via the federal government's repayment estimator tool.](#)

⁵⁹ The most valuable IDR plans for these borrowers were the PAYE and REPAYE plans. Typically, the value was similar between the two plans. See [Exhibit 22](#) for an overview of the different federal repayment plans.

offered by the typical state program. The value of a 5.5% APR compared to a 6.0% APR is \$400.

If a state cannot offer a lower APR than the federal government for loans with comparable terms, borrowers would not be better off refinancing. Alternative assumptions about a borrower's loan amount, income growth, or discount rate would not change this. We would not expect the results for a more recent cohort of college graduates to differ because, since July 2013, the APR for Unsubsidized Direct Federal Loans has remained between 3.76% and 4.66%.⁶⁰

We could expect to see results for future cohorts differ if interest rates fall and federal loan APRs become high relative to the rates the states can offer. However, as discussed on pg. 9, we expect interest rates to rise in the future.

Nevertheless, even if most undergraduate borrowers would not refinance their federal loans through a typical state-operated refinancing program, it does not mean that no undergraduate borrowers would be better off refinancing. An important limitation of [Exhibit 24](#) is that it focuses on borrowers with federal loan debt. This is because data on student borrowing from non-federal sources, such as the private market, is difficult to obtain and was therefore not available for this study (see discussion on pgs. 39-40). Because private banks and credit unions tend to charge higher rates than the federal government, undergraduates who took out private loans may benefit from the opportunity to

⁶⁰ U.S. Department of Education. [Interest rates and fees.](#)

refinance private loans through a state plan offering 6.0% APR.

Graduate and Professional Student Analysis

[Exhibit 25](#) relies on the same methodology as [Exhibit 24](#), and it shows the results of comparisons for IDR plans and a state-based refinancing plan for graduate and professional school borrowers. As before, the value of refinancing is the difference between the value of the payments they would need to make with IDR compared to the value of the payments they would need to make with refinancing. A negative number indicates that it is less costly for the borrower to repay their loan through an IDR plan. We used the median cumulative federal loan debt for a borrower completing either degree (\$37,315) and assumed an APR of 6.8%.⁶¹ Actual loan debt varies considerably across students (see [Exhibit A21](#)).

[Exhibit 25](#) shows that some graduate and professional degree completers would be better off refinancing their federal loans through a typical state-based refinancing program. The value of refinancing tends to be higher for borrowers who are not eligible for PSLF, and it tends to become desirable for borrowers whose annual income exceeds their cumulative loan debt. A PSLF-eligible graduate borrower with the assumed median amount of federal debt at an APR of 6.8% would need to earn more than \$60,000 to be better off with a state offer to refinance at 6.0% APR.⁶²

Our analyses in [Exhibits 24](#) and [25](#) illustrate why many other states have found that the main market for student loan refinancing consists of 1) graduate borrowers with federal and/or private student loan debt and 2) undergraduate borrowers with private student loan debt.

⁶¹ Federal loans available to graduate and professional students in this time period had an APR of 6.8%, which we verified using loan-level data for graduate and professional borrowers from WSAC. Note that cumulative borrowing statistics differ from previous sections because our data source linking income to borrowing did not include borrowers earning degrees from private colleges.

⁶² This level of income is not shown in [Exhibit 24](#).

Exhibit 25

Value of Income-Driven Repayment (IDR) Versus Refinancing: 2012 Graduate/Professional Degree Completers

| 2013 income | PSLF-eligible borrower | | | PSLF-ineligible borrower | | |
|-------------|------------------------|-----------------------------|----------------------------------|--------------------------|-----------------------|----------------------------------|
| | Value of IDR payments | Value of refinance payments | Difference in value of payments* | Value of IDR payments | Value of IDR payments | Difference in value of payments* |
| \$10,000 | \$0 | \$38,600 | (\$38,600) | \$0 | \$38,600 | (\$38,600) |
| \$20,000 | \$3,500 | \$38,600 | (\$35,100) | \$10,300 | \$38,600 | (\$28,300) |
| \$30,000 | \$13,100 | \$38,600 | (\$25,500) | \$29,000 | \$38,600 | (\$9,600) |
| \$40,000 | \$22,700 | \$38,600 | (\$15,900) | \$42,600 | \$38,600 | \$4,000 |
| \$50,000 | \$32,000 | \$38,600 | (\$6,600) | \$41,200 | \$38,600 | \$2,600 |
| \$60,000 | \$37,900 | \$38,600 | (\$700) | \$40,300 | \$38,600 | \$1,700 |

Notes:

* Difference in value of payments = Value of IDR payments - Value of refinance payments

All values are in 2013 dollars, rounded to the nearest \$100, and reflect a borrower discount rate of 3% and 2.4% annual inflation. We assume all borrowers have the 2013 median Washington cumulative federal loan debt amount (\$37,315) for a borrower completing either a graduate or professional degree with an associated APR of 6.8%. The values of the IDR payments are calculated based on the best available federal IDR plan. The values of the refinance payments are calculated under a hypothetical state program with a loan term of 10 years and APR of 6.0%. Additional methodological details are in Appendix III.

Loan Deferment, Forbearance, and Flexibility

The previous section focused on the value of IDR plans and the PSLF Program. This section focuses on two other kinds of federal program benefits 1) financial benefits of federal forbearance and deferment programs and 2) non-financial benefits offered by forbearance, deferment, or IDR plans.

Financial Benefits of Federal Forbearance and Deferment Programs

All federal loan program participants potentially benefit from policies on loan deferment and forbearance (see [Exhibit 26](#)). Deferment and forbearance temporarily relieve the borrower's obligation to make payments. They are available irrespective of one's choice of a federal repayment plan, so their benefits accrue similarly to borrowers on conventional and IDR plans. However, borrowers often lose these benefits if they

choose to refinance their loans through a typical state-based plan. Deferments were available in a few of the state programs, but they tend to be less generous than the federal government's.

During deferment a borrower is not responsible for paying the interest that accrues on certain loan types. During a forbearance period, the accruing interest is added to the total loan balance. Under the most favorable circumstances to the borrower, deferment effectively offers the same benefit as a short-term, interest-free loan. The value of the deferment depends on how much the borrower values immediate access to money compared to the same amount of money in the future (i.e., discount rate). In other words, borrowers do not have to pay their monthly student loan payments while their loans are in deferment and can instead use this amount for other obligations, like rent or mortgage payments.

As previously discussed, the differential value of access to money in the present compared to the future is typically quantified using a discount rate, where a higher discount rate means that an individual more strongly values immediate access to money. For a Direct Subsidized Loan of \$10,000 with a 5.5% APR, the value of a one-year deferment for an individual with a real discount rate of 3% is \$555.⁶³

Non-Financial Benefits

Previous research on the value of IDR using credit bureau records found that greater flexibility in a loan repayment schedule also led to a more efficient use of credit by the borrowers. The results of the study suggest that flexibility in repayment has considerable non-financial value, even if the total amount repaid is unaffected. For a borrower who was at risk of loan delinquency, a single study found that enrolling in an IDR plan reduced the probability of loan delinquency, increased credit scores, and increased short-term purchasing.⁶⁴ As a result of enrolling, the author found that borrowers were also more likely to own a home two years later.

The study found that, similar to other forms of credit access, IDR ultimately allowed individuals to avoid periods of unnecessary financial restraint.⁶⁵ While the study did not estimate the effects of forbearance or deferment, the potential benefit of short-term relief that IDR can offer is similar to the

kind of short-term relief that deferment and forbearance offer borrowers. Loan delinquency and default may be costly in terms of mental health and downstream economic consequences, such as more limited access to future credit as a result of a lower credit score.⁶⁶

⁶³ Interest for the first month is $\$10,000 * (0.055/12) = \45.83 . Multiplying by 12 months gives a yearly cost of \$549.96. An additional \$5 comes from discounting of payments and interest capitalization.

⁶⁴ Herbst, D. (2018). *Liquidity and insurance in student loan contracts: estimating the effects of income-driven repayment on default and consumption*. Unpublished dissertation.

⁶⁵ Ibid.

⁶⁶ Peek, A. (2018). *The effectiveness of the student loan safety net: An evaluation of income-driven loan repayment* (Doctoral dissertation, The George Washington University).

Exhibit 26

Federal Loan Deferment and Forbearance Programs

| Program | Borrower eligibility | Loan eligibility | Terms |
|-----------------------------|--|--|---|
| Deferment | Enrolled at least half-time in postsecondary education. Unemployed. Active duty military service. | Direct, Stafford, Perkins | Generally not responsible for paying interest on subsidized federal loans (including Perkins) or on subsidized portion of consolidation loans. |
| Economic Hardship Deferment | Gross income is less than 150% of poverty guideline (\$1,507 monthly for an individual). | Direct, Stafford, Perkins | Generally not responsible for paying interest on subsidized federal loans (including Perkins) or on subsidized portion of consolidation loans. |
| General Forbearance | Loan servicer discretion based on inability to pay due to financial difficulties. | Direct, Stafford, Perkins | Granted for up to 12 months at a time, but can be renewed if hardship continues. No fixed cumulative limit for Direct/Stafford loans. Three-year cumulative limit on Perkins. |
| Mandatory Forbearance | Medical or dental internship/residency. Total monthly student loan payment is 20% or more of gross monthly income. Qualifying public service occupation. | Direct, Stafford, Perkins (can only qualify based on income) | Granted for up to 12 months at a time, but can be renewed if eligibility persists. Low-income can only qualify for mandatory forbearance for up to three years. |

Conclusion to Sections III and IV

Sections III and IV examine the potential benefit to borrowers from refinancing student loans under a wide range of repayment scenarios: conventional federal repayment plans, income-driven repayment (IDR) plans, and a typical state refinancing plan.

Section III estimates the potential savings in nominal dollars from refinancing loans through a hypothetical state refinancing plan compared to a standard federal repayment plan. We detail how payments vary by loan balance, APR, and the length of time for repayment.

Section IV considers financial and non-financial benefits of federal repayment programs compared to a typical state refinance program, with a particular focus on the value of IDR plans.

The main finding from both Sections III and IV is that undergraduate borrowers would not typically benefit from refinancing their federal loans with a state-based program but graduate or professional school borrowers may. This is in part because federal loans for undergraduate education typically have low interest rates, making it difficult for state refinancing programs to compete.

Because federal loans for graduate education tend to carry higher interest rates, it is more likely for graduate and professional students to benefit from refinancing federal loans. The extent to which they benefit depends on their loan balance, employment sector, and annual income. Graduate degree completers employed in the *private* sector stand to

benefit if their total federal debt exceeds their annual income. By contrast, graduate degree completers continually employed in the *public* sector need to have approximately twice as much annual income as federal debt to benefit from refinancing. This is because they potentially qualify for loan forgiveness, which is more generous for lower-income borrowers.

Exhibit 27 provides some context to this finding by illustrating the proportion of graduate and professional student loan borrowers⁶⁷ in Washington by loan debt and annual income. It shows 2013 (Panel “A”) and 2016 (Panel “B”) earnings for the same 2012 cohort of graduate and professional students with any federal loan debt. While the previous exhibits focused on how much different kinds of borrowers stood to benefit from refinancing, Exhibit 27 shows the prevalence of these different borrower groups.

Note that the sample size (n) shown for each column is smaller than the total number of degree completers (N). This is because the sample for Exhibit 27 was restricted to borrowers with both 2013 and 2016 earnings in Washington State in the same sector of the economy (public or private).

Panel “A” of Exhibit 27 shows that a substantial proportion of graduate-level borrowers work in the private sector upon graduation and have annual incomes exceeding their cumulative federal loan debt. This is indicated by the darkest cell in the bottom-right corner of the private

⁶⁷ A similar analysis is provided for different student types in Exhibit A21.

sector workers. Having at least \$40,000 in debt and at least \$60,000 in earnings in the private sector is relatively common (13.3%). Refinancing tends to be more valuable for these borrowers because they have enough debt to benefit from the difference in the APR between their existing loans and those offered by a typical state refinance program, and they have high enough earnings to reduce or eliminate the value of a federal IDR plan.

In the public sector, the region of cells representing individuals with incomes

greater than \$40,000 and debt above \$20,000 is the most prevalent.

Panel “B” shows 2016 income for the same borrowers. In 2016, the majority of workers with a graduate or professional degree earned at least \$60,000 irrespective of the employment sector and amount borrowed. As borrower earnings increase during the first several years of employment, the value of IDR and PSLF tend to decrease, which means that an increasing proportion of graduate and professional school borrowers would stand to benefit from refinancing.

Exhibit 27

Income and Cumulative Federal Borrowing for 2012 Grad/Professional Degree Completers:
By Employment Sector and Year

| (A) | Public sector workers | | | Private sector workers | | |
|-------------------------------|-----------------------|-------------------------|--------------------|------------------------|-------------------------|--------------------|
| 2013 income | Borrowed < \$20k | Borrowed \$20k-\$40k | Borrowed \$40k+ | Borrowed < \$20k | Borrowed \$20k-\$40k | Borrowed \$40k+ |
| Grad/Prof. N=1,806 | n=243 | n=338 | n=314 | n=201 | n=264 | n=446 |
| < \$10,000 | 0.6% | 0.6% | 0.6% | 0.7% | 0.7% | 1.5% |
| \$10,000 - \$19,999 | 0.6% | 0.6% | 0.6% | 0.4% | 0.7% | 1.3% |
| \$20,000 - \$29,999 | 0.6% | 0.8% | 1.3% | 1.0% | 1.1% | 1.2% |
| \$30,000 - \$39,999 | 1.4% | 2.1% | 1.3% | 1.6% | 1.7% | 2.2% |
| \$40,000 - \$49,999 | 3.0% | 4.2% | 2.9% | 1.3% | 2.5% | 2.4% |
| \$50,000 - \$59,999 | 3.8% | 6.4% | 5.5% | 1.5% | 1.8% | 2.8% |
| \$60,000+ | 3.4% | 4.0% | 5.2% | 4.7% | 6.0% | 13.3% |
| (B) | Public sector workers | | | Private sector workers | | |
| 2016 income | Borrowed < \$20k | Borrowed \$20k-\$40k | Borrowed \$40k+ | Borrowed < \$20k | Borrowed \$20k-\$40k | Borrowed \$40k+ |
| Grad/Prof. N=1,806 | n=243 | n=338 | n=314 | n=201 | n=264 | n=446 |
| < \$10,000 | 0.2% | 0.3% | 0.5% | 0.3% | 0.4% | 0.6% |
| \$10,000 - \$19,999 | 0.2% | 0.5% | 0.2% | 0.2% | 0.4% | 0.4% |
| \$20,000 - \$29,999 | 0.4% | 0.6% | 0.5% | 0.4% | 0.6% | 0.4% |
| \$30,000 - \$39,999 | 0.8% | 0.7% | 1.1% | 0.8% | 0.8% | 1.4% |
| \$40,000 - \$49,999 | 1.3% | 2.0% | 1.5% | 1.0% | 1.7% | 1.7% |
| \$50,000 - \$59,999 | 2.6% | 4.9% | 2.7% | 1.2% | 1.3% | 1.9% |
| \$60,000+ | 7.9% | 9.7% | 10.9% | 7.2% | 9.4% | 18.2% |

Note:

Percentages sum to 100% for each year. The sample is limited to degree completers with federal loan debt who were employed in the same sector within Washington State in both 2013 and 2016. Additional details are in Appendix III.

[Exhibit 28](#) summarizes our conclusions on the value of a state refinance plan compared to the next best federal repayment plan available to each borrower type. It provides those estimates by different types of borrowers (undergraduate and graduate) who completed their degrees in 2012 with different types and levels of student debt.

The methods and assumptions used to estimate the values in the table are the same used throughout [Section IV](#) and discussed on pgs. 46-48. For a typical state refinancing program, we continue to assume a fixed APR of 6.0%, our estimate of the midpoint APR for a 10-year repayment term currently offered by state refinancing programs.

Note that the values presented in the exhibit are from the perspective of graduating students in 2012 based on the entire future of loan payments. [Section III](#) provides a more general understanding of the future savings that individuals in 2019 might consider when refinancing their loans.

We make an additional assumption that the private student loan debt had a term length of 10 years and a rate of 7.9%, the same APR as the Parent PLUS Loan Program, which is the undergraduate loan program whose borrowers most closely resemble the market for private student loans. While it is possible that borrowers with excellent credit can obtain private students loans at lower rates, we consider 7.9% an underestimate of the typical private student loan APR (see pg. 40 for a discussion of private student loans).

Undergraduates comprised about 81% of the degree completers with any debt in 2012. The value of refinancing federal loans

for this population is likely \$0, regardless of debt level and income. Even before accounting for the value of deferment, forbearance, and alternative repayment plans, the interest rates for federal loans for undergraduate education are typically lower than states can offer, except during periods of significant interest rate decline.

However, not all undergraduate loan debt is federal student loan debt. National data shows that about 29% of undergraduates had private student loans. For this population, the value of refinancing depends on their loan debt. For a borrower with up to \$20,000 in private loans, we estimate that the value of refinancing ranges from \$0-\$1,800. The value is greater for borrowers with more private loan debt. Nationally, the average cumulative balance for this population is around \$15,000.⁶⁸

Graduate and professional students collectively comprised about 19% of degree completers with any federal loan debt in 2012. The value of refinancing for this population is proportional to their student loan debt. The majority of graduate degree completers have loan debt, and the more they borrowed, the more highly they tend to value a state refinancing program. For a borrower with \$40,000 in federal loan debt with an estimated APR of 6.8%, the value of refinancing at 6.0% is \$3,600.

⁶⁸ National Center for Education Statistics. (2016). See [table 331.95](#)—Percentage of undergraduate students ages 18 to 24 in their 4th (senior) year or above who ever received federal loans, nonfederal loans, or Parent Loans for Undergraduate Students (PLUS), and average cumulative amount borrowed, by selected student characteristics and control and level of institution: 1989-90, 1999-2000, and 2011-12.

National data on the proportion of graduate students with private student loans and their average private student loan amount is unavailable. However, graduate and professional students tend to carry a larger debt than undergraduates. A cautious

estimate of the value of refinancing would assume a similar proportion and average loan amount as undergraduates, which would imply a lower bound of \$0-\$1,800 for the value of refinancing private student loan debt.

Exhibit 28

The Value of a Typical State-Based Student Loan Refinance Program Compared to a Borrower's Next Best Repayment Option, by Borrower and Loan Type

| Borrower type | Loan type | Original loan balance | Potential value of refinancing | Estimated percentage of 2012 degree completers who borrowed |
|---|--------------------|-----------------------|--------------------------------|---|
| 2-yr or 4-yr undergrad degree completers | Federal (5.5% APR) | \$1-\$20k | \$0 | 51.3% |
| | | \$20k-\$40k | \$0 | 25.7% |
| | | \$40k+ | \$0 | 3.6% |
| | Private (7.8% APR) | \$1-\$20k | \$0-\$1,800+ | ? |
| | | \$20k-\$40k | \$1,800-\$3,600+ | ? |
| | | \$40k+ | \$3,600+ | ? |
| Graduate or professional degree completers | Federal (6.8% APR) | \$1-\$20k | \$0-\$750 | 4.8% |
| | | \$20k-\$40k | \$750-\$1,500 | 6.4% |
| | | \$40k+ | \$1,500+ | 8.1% |
| | Private (7.8% APR) | \$1-\$20k | \$0-\$1,800+ | ? |
| | | \$20k-\$40k | \$1,800-\$3,600+ | ? |
| | | \$40k+ | \$3,600+ | ? |

Notes:

The potential values of refinancing are calculated under a hypothetical state program with a loan term of 10 years and APR of 6.0%. The federal and private loans are assumed to have a standard loan term of 10 years with the APR as listed for each loan type.

The estimated percentage column was calculated using data on 2012 degree completers who were employed in Washington State in 2013 and 2016.

The sum of percentages is 100%, within rounding error. For example, 51.3% of all 2012 degree completers with any loan debt were undergraduates who borrowed less than \$20,000. We do not know what percentage also had private loans.

VI. Summary of Findings

In this study, we surveyed other state programs to identify major considerations for states looking to develop a student loan refinance program. We also estimated how Washington State borrowers could potentially benefit from a hypothetical state program and considered the value of federal benefits that borrowers could lose through refinancing.

In [Section II](#), we concluded that while the specific organizational structure and funding mechanisms used by state refinance programs does vary, the final loan product that states offer is largely driven by market forces and relatively similar across program. Whether Washington can provide a refinanced loan product that offers terms competitive with those offered by private and other state programs depends in a large part upon information beyond the scope of this report, specifically the program's cost of funds, the cost to administer, and the size of the underlying market, particularly the private student loan market.

The cost of funds for a hypothetical Washington program depends on the type of funding that the state chooses to use. Our initial analysis shows that there are several barriers to using tax-exempt bonds to fund such a program, including high reserve costs and legal complexities. Other states reported working closely with financial consultants to both determine the specifics of the loan offered and the means for financing the program.

While some states performed a cost analysis to estimate the cost of administering a refinance program, other states were able to use their existing in-school loan programs to launch a pilot program at minimal cost. All but two of the other states we interviewed had existing in-school loan programs prior to launching a refinance program. Washington does not have such an in-school program.

Other states worked with outside consultants to perform market analysis, which was used to determine the size of the underlying student loan refinancing market, including private loans. This type of study could help to determine the number of potential borrowers in Washington, their existing loan balances and interest rates, and their credit scores.

In addition to surveying other states, we also estimated how borrowers would stand to gain or lose from refinancing.

In [Section III](#), we estimated the total nominal savings that different student groups would receive if they were able to refinance their federal student loans under a hypothetical state refinancing program as compared to remaining in a standard federal repayment plan. In [Section IV](#) we considered the value in adjusted dollars of the federal benefits that borrowers would give up if they refinanced, specifically income-driven repayment (IDR) and loan debt forgiveness.

While [Sections III](#) and [IV](#) used different methodological approaches and assumptions, they provided some relatively consistent conclusions.

In general, we found that most undergraduates would not experience much savings in nominal total payments from refinancing federal loans except under very specific loan terms. Additionally, we estimated that this group would place a high value on federal IDR plans, which they would forego if they refinanced out of a federal payment plan.

However, graduate and professional students would experience savings in total nominal payments from refinancing compared to a standard federal program under a much larger variety of loan terms. Additionally, we estimated that this group would tend to benefit less from federal IDR plans and debt forgiveness. We estimated a particularly low value of these benefits for

high-earning individuals employed in the private sector.

However, both of these analyses focused mainly on federal student loan debt. While fewer students have private student loan debt, they likely carry a much higher APR, which makes those loans much more beneficial to refinance. While beyond the scope of this study, a market analysis could provide additional information on the full population of Washington State residents with private and federal student loans, including information on loan balances and APR along with information on individual credit scores and borrower qualifications.



Appendices

Student Loan Bill of Rights: *Student Loan Refinancing*

| | |
|----------|--|
| Appendix | |
| I. | Background.....62 |
| II. | Impacts of a State Refinancing Program63 |
| III. | Value of Foregone Federal Benefits.....75 |

I. Background

Exhibit A1

Cumulative Loan Balances by Loan Type:
Washington State Public College or University Degree Completers (2012)

| | n > \$0 | Mean | Min | 25 th percentile | 50 th percentile | 75 th percentile | Max | Standard deviation |
|-------------------------------------|---------|----------|---------|--------------------------------|--------------------------------|--------------------------------|-----------|-----------------------|
| UNDERGRADUATE: 2-YEAR (N=25,919) | 6,957 | \$13,405 | \$185 | \$5,639 | \$11,300 | \$19,462 | \$76,075 | \$9,433 |
| <i>All Federal (to student)</i> | 6,926 | \$12,963 | \$185 | \$5,500 | \$10,500 | \$19,000 | \$73,348 | \$9,088 |
| Perkins | 410 | \$1,725 | \$167 | \$1,000 | \$1,000 | \$2,000 | \$16,000 | \$1,532 |
| Unsubsidized | 525 | \$4,282 | \$72 | \$1,802 | \$3,867 | \$5,745 | \$25,328 | \$3,446 |
| Unsubsidized Direct | 5,389 | \$7,402 | \$2 | \$3,003 | \$6,038 | \$11,217 | \$30,908 | \$5,126 |
| Subsidized Direct | 6,849 | \$6,847 | \$17 | \$3,500 | \$6,125 | \$9,250 | \$32,849 | \$4,058 |
| Health Profession | 13 | \$3,458 | \$833 | \$2,358 | \$2,500 | \$4,750 | \$6,965 | \$1,774 |
| <i>Federal Parent PLUS</i> | 229 | \$10,403 | \$682 | \$5,374 | \$8,538 | \$13,361 | \$44,967 | \$7,595 |
| <i>Non-Federal</i> | 149 | \$7,333 | \$228 | \$2,878 | \$5,529 | \$10,773 | \$32,887 | \$5,977 |
| UNDERGRADUATE: 4-YEAR (N=23,404) | 11,744 | \$23,664 | \$94 | \$10,947 | \$19,796 | \$31,540 | \$177,630 | \$18,148 |
| <i>Federal (to student only)</i> | 11,720 | \$19,045 | \$94 | \$9,500 | \$17,100 | \$25,901 | \$100,183 | \$12,154 |
| Perkins | 3,297 | \$2,537 | \$17 | \$1,000 | \$2,000 | \$3,000 | \$16,560 | \$2,002 |
| Unsubsidized | 1,818 | \$7,121 | \$7 | \$2,786 | \$5,000 | \$9,854 | \$62,293 | \$6,583 |
| Unsubsidized Direct | 8,855 | \$7,982 | \$9 | \$3,765 | \$6,641 | \$11,021 | \$44,929 | \$5,860 |
| Subsidized Direct | 11,617 | \$11,239 | \$41 | \$5,500 | \$10,950 | \$15,757 | \$42,374 | \$6,013 |
| Health Profession | 163 | \$4,033 | \$545 | \$3,000 | \$4,009 | \$5,200 | \$12,880 | \$1,952 |
| <i>Federal Parent PLUS</i> | 2,295 | \$18,384 | \$112 | \$6,600 | \$13,024 | \$24,318 | \$149,714 | \$17,535 |
| <i>Non-Federal</i> | 837 | \$14,955 | \$767 | \$5,000 | \$10,000 | \$19,900 | \$94,226 | \$14,261 |
| GRAD/PROFESSIONAL (N=7,236) | 3,836 | \$51,510 | \$416 | \$20,400 | \$37,580 | \$64,905 | \$274,414 | \$45,036 |
| <i>Federal</i> | 3,834 | \$51,081 | \$416 | \$20,398 | \$37,315 | \$64,357 | \$270,247 | \$44,414 |
| Grad PLUS | 1,316 | \$21,283 | \$60 | \$6,413 | \$13,971 | \$30,331 | \$133,887 | \$21,070 |
| Perkins | 900 | \$2,733 | \$9 | \$2,000 | \$2,000 | \$3,167 | \$12,000 | \$1,684 |
| Unsubsidized | 299 | \$15,324 | \$680 | \$5,875 | \$10,758 | \$22,018 | \$94,920 | \$13,463 |
| Unsubsidized Direct | 3,048 | \$29,309 | \$202 | \$11,940 | \$21,178 | \$31,172 | \$147,425 | \$29,873 |
| Subsidized Direct | 3,827 | \$18,288 | \$144 | \$8,500 | \$16,917 | \$25,376 | \$59,378 | \$9,635 |
| Health Professions | 80 | \$18,384 | \$1,500 | \$5,200 | \$8,584 | \$25,588 | \$109,343 | \$21,068 |
| <i>Non-Federal</i> | 179 | \$9,777 | \$439 | \$4,198 | \$7,913 | \$10,850 | \$74,321 | \$10,872 |

Notes:

N is the total number of graduates, and (n > \$0) is the number of borrowers with non-zero balances for the loan/loan type in each row.

Undergraduate 2-year degree completion includes associate's degree completers only.

Statistics for grad/professional graduates excludes debt incurred during undergraduate education.

Source: The Educational Research and Data Center (ERDC) and the Washington Student Achievement Council (WSAC).

II. Impacts of a State Refinancing Program

This section elaborates on our methodology for estimating the savings from student loan refinancing. It describes our:

- Student inclusion criteria,
- Loan inclusion criteria,
- Method for selecting a “representative” student,
- Method for calculating the change in total loan payments for the “representative student,” and
- Estimates of the change in monthly payments by student population.

Student Inclusion Criteria

We examine the student loan debt of eight distinct populations of likely graduates. The criteria for group inclusion for each student program type in the 2012 and 2016 cohort are included in [Exhibit A3](#).

Exhibit A2

List of Program Populations

| 2012 cohort | | 2016 cohort |
|--------------|---|---|
| Program type | A. 2-year undergraduate students in the class of 2012 | B. 2-year undergraduate students in the class of 2016 |
| | C. 4-year undergraduate students in the class of 2012 | D. 4-year undergraduate students in the class of 2016 |
| | E. Graduate students in the class of 2012 | F. Graduate students in the class of 2016 |
| | G. Professional students in the class of 2012 | H. Professional students in the class of 2016 |

Exhibit A3

Student Inclusion Criteria for the 2012 and 2016 Cohorts

| Program type | Criteria for inclusion in “likely graduate” |
|-------------------------------|---|
| 2-year undergraduate students | <ul style="list-style-type: none"> • Institution code indicates that student attended a community, technical college, or private career college (hereafter: 2-year college) • Student does not appear in WSAC data as a <u>2-year college student</u>^a after the 2011-12 (2015-16) academic year • Student class^b = 2 in the 2011-12 (2015-16) academic year • Obtained at least one undergraduate student loan while enrolled at a 2-year college |
| 4-year undergraduate students | <ul style="list-style-type: none"> • Institution code indicates that student attended a public 4-year research university, public 4-year comprehensive university, or independent/private 4-year college or university (hereafter: 4-year college) • Student does not appear in WSAC data as an <u>undergraduate student</u>^c at a 4-year college after the 2011-12 (2015-16) academic year • Student class^b = 4 in the 2011-12 (2015-16) academic year • Obtained at least one student loan while enrolled in an undergraduate program at a 4-year college |
| Graduate students | <ul style="list-style-type: none"> • Student does not appear in WSAC data as a <u>graduate student</u>^d at a 4-year college after the 2011-12 (2015-16) academic year • Student class^b = 6 in the 2011-12 (2015-16) academic year and student appears in WSAC database for at least two years when student class = 6 • Obtained at least one student loan while enrolled in a graduate program at a 4-year college |
| Professional students | <ul style="list-style-type: none"> • Student appears in WSAC database for at least two years when student class = 7 • Student does not appear in WSAC data as a <u>professional student</u>^e at a 4-year college after the 2011-12 (2015-16) academic year • Student class^b = 7 in the 2011-12 (2015-16) academic year • Obtained at least one student loan while enrolled in a professional program at a 4-year college |

Notes:

^a The student may be present in the Washington Student Achievement Council (WSAC) data if the student continued their education beyond the cohort year at another college type (example: enrolled in a 4-year college program). However, the analysis does not include subsequent loan data in the other program.

^b Student class refers to a specific WSAC data field that reports a student’s class in school (e.g., freshman, sophomore, etc.).

^c The student may be present in WSAC data if the student continued their education beyond the cohort year at another college type (example: enrolled in a graduate program). However, the analysis does not include subsequent loan data in the other program. The analysis does include loans from 2-year programs because credits earned in 2-year programs may be applied to 4-year programs.

^d The student may be present in WSAC data at another college type (example: undergraduate college program). However, the analysis does not include undergraduate or professional program loans.

^e The student may be present in WSAC data at another college type (example: undergraduate college program). However, the analysis does not include undergraduate or graduate program loans.

Loan Inclusion Criteria

We examine the student loan debt for each of the eight populations of likely graduates previously outlined in [Exhibit A2](#).

Exhibit A4

List of All Student Loans to be Included in the Analysis of Total Debt

| | 2-year students | 4-year students | Graduate students | Professional students |
|--|--|---|--|--|
| Inclusion criteria | Loan accrued while enrolled at a 2-year institution only | Loans accrued while enrolled at a 2-year or 4-year institution (for students who were last enrolled at a 4-year institution only) | Loan accrued while enrolled in a graduate program only | Loan accrued while enrolled in a professional program only |
| Loan type | | | | |
| Federal Perkins Loans | Included | Included | Included | Included |
| Federal Direct Subsidized (Stafford) Loans | Included | Included | Not included | Not included |
| Federal Direct Unsubsidized (Stafford) Loans | Included | Included | Not included | Not included |
| Federal Subsidized Stafford Loans | Included | Included | Not included | Not included |
| Federal Unsubsidized Stafford Loans | Included | Included | Not included | Not included |
| Federal Nursing Student Loan or Health Professions Student Loan | Included | Included | Included | Included |
| Federal Graduate and Professional Plus Loans | Not included | Not included | Included | Included |
| Federal Parent PLUS Loans | Not included | Not included | Not included | Not included |
| Institutional loans | Not included | Not included | Not included | Not included |
| Loans, not reported elsewhere, received from private sources | Not included | Not included | Not included | Not included |
| Loans, not reported elsewhere, received from government agencies | Not included | Not included | Not included | Not included |

Method for Selecting a “Representative” Student

We identified the 20 students closest to the mean cumulative federal loan debt and the 20 students closest to the 75th percentile of the cumulative federal loan debt for each of the eight populations. We also identified the 20 students closest to the mean cumulative total loan debt and the 20 students closest to the 75th percentile of the cumulative total loan debt for the four 2016 populations. We were not able to analyze the total loan debt for the 2012 cohort because prior to 2012, the data on private student loans were aggregated with conditional scholarships and much less likely to be consistently reported.

We selected a single representative student from the group of 20 students closest to the mean cumulative student debt for each student population (2-year undergraduate, 4-year undergraduate, graduate, and professional). We chose this student based on proximity to the mean student debt and how closely the student’s debt patterns matched the other 19 students in the population. For example, we did not want to select someone with an unusually high percentage of unsubsidized student loans or whose pattern of borrowing was an outlier. We used the individual student loan information for a representative student in each population, rather than using average student loan debt information, because the various types of loans are partial substitutes. For example, a student may choose to take out an unsubsidized federal student loan or private student loan if he or she is unable to obtain a subsidized federal student loan. Examining average student debt runs the risk of painting an inaccurate picture of students’ borrowing patterns or overestimating student debt, as explained through the simplified hypothetical example illustrated in [Exhibit A5](#) and discussed below.

[Exhibit A5](#) considers a hypothetical situation where students A through E only take out subsidized or unsubsidized federal loans. We will further assume that tuition is \$10,000 per year. The hypothetical student debt in this scenario is listed below. Column F shows the average student debt for each loan type/year. Column G shows the average student debt for students with a positive loan balance for that loan type/year. Students A, B, and C are eligible for subsidized student loans and they always take these loans out when they need a loan to pay tuition for the semester. Students D and E are not eligible for subsidized loans and must take out unsubsidized loans when paying tuition.

Exhibit A5

List of Hypothetical Student Debt

| | Student A | Student B | Student C | Student D | Student E | F (average student loan debt) | G (average if loan debt > 0) |
|----------------------------|--------------|--------------|--------------|--------------|--------------|--|------------------------------------|
| 2009-2010: Subsidized | \$0 | \$0 | \$10,000 | \$0 | \$0 | \$2,000 | \$10,000 |
| 2009-2010: Unsubsidized | \$0 | \$0 | \$0 | \$0 | \$10,000 | \$2,000 | \$10,000 |
| 2010-2011: Subsidized | \$0 | \$10,000 | \$10,000 | \$0 | \$0 | \$4,000 | \$10,000 |
| 2010-2011: Unsubsidized | \$0 | \$0 | \$0 | \$10,000 | \$10,000 | \$4,000 | \$10,000 |
| 2011-2012: Subsidized | \$10,000 | \$10,000 | \$10,000 | \$0 | \$0 | \$6,000 | \$10,000 |
| 2011-2012: Unsubsidized | \$0 | \$0 | \$0 | \$10,000 | \$10,000 | \$4,000 | \$10,000 |
| Total | \$10,000 | \$20,000 | \$30,000 | \$20,000 | \$30,000 | \$22,000 | \$60,000 |

We need to know the loan type and year to match debt balance to federal student loan data in order to determine the average interest rate paid by the student. There are several options for achieving this.

If we use the average borrowed amount for each loan type by year (column F), we would correctly estimate the average loan debt, as shown in the final total row. However, we would underestimate the typical loan debt for each type of loan. Students only take out \$10,000 student loans per year in our scenario, but the average student loan estimate would suggest that students are splitting their loans between subsidized and unsubsidized loans (which is never true).

If we take the average, based only on students with a positive debt in each category (column G), we would correctly identify the amount that students are borrowing, on average, for each loan type but drastically overestimate the student debt overall, as shown in the final total row.

By looking at the individual student loan information, we can see that students B and D, each with \$20,000 in loans, are closest to the mean student loan total amount of \$22,000 as shown in the final total row. We know from aggregate level data that students are more likely to take out subsidized student loans as opposed to unsubsidized student loans. This leads us to select student B (who takes out only subsidized loans) as be a more representative choice for estimation than student D (who takes out only unsubsidized loans). In this situation, we would select student B as the representative student.

Method for Calculating the Change in Total Loan Payments for the “Representative Student”

Once we have constructed our representative student, we match the students’ loans to historical federal interest rate data (enumerated in [Exhibit A6](#)) and determine the students’ expected balance in 2019.

Exhibit A6

List of Federal Student Loan Interest Rates

| Academic year | Direct Subsidized Loans (undergrad) | Direct Unsubsidized Loans (undergrad) | Subsidized Federal Stafford Loans (undergrad) | Direct Subsidized Loans (graduate) | Direct Unsubsidized Loans (graduate) | Subsidized Federal Stafford Loans (graduate) | Perkins Loans | Direct PLUS Loans (parents and graduates or professional) |
|------------------|-------------------------------------|---------------------------------------|---|------------------------------------|--------------------------------------|--|---------------|---|
| 2015-2016 | 4.29% | 4.29% | NA | NA | 5.84% | NA | 5% | 6.84% |
| 2014-2015 | 4.66% | 4.66% | NA | NA | 6.21% | NA | 5% | 7.21% |
| 2013-2014 | 3.86% | 3.86% | NA | NA | 5.41% | NA | 5% | 6.41% |
| 2012-2013 | 3.40% | 6.80% | NA | NA | 6.80% | NA | 5% | 7.90% |
| 2011-2012 | 3.40% | 6.80% | NA | 6.80% | 6.80% | NA | 5% | 7.90% |
| 2010-2011 | 4.50% | 6.80% | NA | 6.80% | 6.80% | NA | 5% | 7.90% |
| 2009-2010 | 5.60% | 6.80% | 5.60% | 6.80% | 6.80% | 6.80% | 5% | 7.90% |
| 2008-2009 | 6.00% | 6.80% | 6.00% | 6.80% | 6.80% | 6.80% | 5% | 7.90% |
| 2007-2008 | 6.80% | 6.80% | 6.80% | 6.80% | 6.80% | 6.80% | 5% | 7.90% |
| 2006-2007 | 6.80% | 6.80% | 6.80% | 6.80% | 6.80% | 6.80% | 5% | 7.90% |

When calculating the student loan balance we make the following assumptions:

- Students made no payments on student loans while enrolled in school.
- Students make the standard loan payment six months after graduation.
- Students take 10 years to pay off student debt (unless their standard loan payment would have been less than \$50).
- Students refinance in year intervals following initial payment.
 - If a student is in the graduating class of 2012, the student starts payments in 2013 and refinances in 2019; they would have completed $72 = (6 \text{ years} * 12 \text{ months})$ payments on their loan.

Recall the hypothetical student loan balances discussed in [Exhibit A5](#). Suppose we selected student B as the representative student. Student B only has subsidized student loans, so we do not need to calculate the amount of interest they would have accrued while in school. Their loan from the 2010-2011 academic year would have an interest rate of 4.5%. Their loan from the 2011-2012 academic year would have an interest rate of 3.4%.

Student B would have paid their debt for six years. We would expect them to have \$4,545 remaining on their 2010-2011 loan and \$4,411 remaining on their 2011-2012 loan.

We compare the potential savings student B will have if they refinance under a state student loan program. We assume that a student will only refinance if the state refinance program reduces their payments. We further assume that a student will only refinance student loans for which the state student loan refinancing program offers them a better deal (i.e., a lower interest rate). We examine the best choice for students based on the change in total payments separately from the change in monthly payments (discussed in the next section).

Student B will only reduce their total payment if the student loan refinancing program offers a 5-year term loan with a maximum interest rate of 3.5%. Student B will never be able to save if they get a loan with a 10-year or 15-year term.

When we look more carefully at the debt, we see that the savings in total payment specifically comes from refinancing the 2010-2011 loan. Since we know that Student B will never refinance the 2011-2012 loan, we can calculate the range of potential benefit for refinancing.

[Exhibit A7](#) lists the total payments that student B would make under each plan, assuming they refinanced all of their student loan debt.

Exhibit A7

List of Total Payments by Interest Rates
(2010-2011 Student Loan Only)

| Interest rate for refinance program | Total loan payment: 5-year term | Total loan payment 10-year term | Total loan payment 15-year term | Comparison: Total payment under original loan terms (original APR = 4.5%) |
|---|---------------------------------------|---------------------------------------|---------------------------------------|--|
| 3.00% | \$4,900 | \$5,266 | \$5,649 | \$4,975 |
| 3.50% | \$4,961 | \$5,393 | \$5,848 | \$4,975 |
| 4.00% | \$5,022 | \$5,522 | \$6,051 | \$4,975 |
| 4.50% | \$5,084 | \$5,652 | \$6,258 | \$4,975 |
| 5.00% | \$5,146 | \$5,785 | \$6,469 | \$4,975 |
| 5.50% | \$5,209 | \$5,919 | \$6,684 | \$4,975 |
| 6.00% | \$5,272 | \$6,055 | \$6,903 | \$4,975 |
| 6.50% | \$5,336 | \$6,193 | \$7,126 | \$4,975 |
| 7.00% | \$5,400 | \$6,332 | \$7,353 | \$4,975 |
| 7.50% | \$5,464 | \$6,474 | \$7,584 | \$4,975 |
| 8.00% | \$5,529 | \$6,617 | \$7,818 | \$4,975 |
| 8.50% | \$5,595 | \$6,762 | \$8,056 | \$4,975 |
| 9.00% | \$5,661 | \$6,909 | \$8,297 | \$4,975 |

If student B refinances to a 5-year loan term at 3.0% interest rate, they would have an expected savings in total payments of \$75 (= \$4,975 - \$4,900).

Estimates of the Change in Monthly Payment by Student Population

Reductions in total loan payments do not necessarily translate to reductions in monthly payments. While lowering the APR on student loans through refinancing will reduce total payments and monthly payments, decreasing the term length will decrease total payments at a cost of increased monthly payments. Students must pay a larger percentage of the total principal balance each month to pay off the loan in the shortened time, which increases monthly payments.

In [Exhibits A8-A11](#), we display the expected change in monthly payments associated with the change in total payments showing in [Section III](#). These calculations were done assuming that students wanted to lower their total payments and only refinanced the specific loans for which their total payment under refinancing was less than their original total payment. It is important to note that students in the 2016 cohort decrease their repayment period if they choose to refinance to 5-year loans.⁶⁹ We find that the interest rate reduction for all the 5-year loans do not offset the decrease in term length, and students are expected to see an increase in monthly payments for all cases in which a student refinances to a 5-year loan. The increase in monthly payments when students refinance to a 5-year loan with an APR of 4.0% ranges from \$78 per month for 2-year undergraduates to \$562 for professional students. When students refinance to a 10- or 15-year loan or when students in the 2012 cohort refinance to a 5-year loan, it will increase their loan terms and decrease their monthly payments.

Additionally, any change in monthly payments from refinancing shown in [Exhibits A8-A11](#) is not necessarily linear. In some cases, there will appear to be a decrease in monthly payments as the interest rate on student loans increase. This is because as the interest rate increases, students change the portfolio of specific student loans they choose to refinance. Since refinancing to 5-year term increases student loan payments, choosing to not refinance will reduce monthly payments in this case.

⁶⁹ The standard repayment plan has an expected term length of seven years for students in the 2016 cohort.

Exhibit A8

Estimated Monthly Savings from Refinancing for a Representative 2-Year Undergraduate Student, by Cohort

| Term length | 2012 Cohort | | | | | 2016 Cohort | | | | |
|-----------------|-------------|----------------------------|--------------------------|-------------------------------|-------------------------------|-------------|----------------------------|--------------------------|-------------------------------|-------------------------------|
| | APR | Total savings [*] | Monthly standard payment | Monthly payment if refinanced | Monthly savings ^{**} | APR | Total savings [*] | Monthly standard payment | Monthly payment if refinanced | Monthly savings ^{**} |
| Original | 5.6% (avg.) | - | \$142 | - | - | 4.4% (avg.) | - | \$160 | - | - |
| 5-year | 4.0% | \$117 | \$142 | \$121 | \$21 | 4.0% | \$1,067 | \$160 | \$238 | (\$78) |
| | 6.0% | \$0 nr | \$142 | \$142 | \$0 | 6.0% | \$370 | \$160 | \$243 | (\$83) |
| | 8.0% | \$0 nr | \$142 | \$121 | \$0 | 8.0% | \$62 | \$160 | \$165 | (\$5) [*] |
| 10-year | 4.0% | \$0 nr | \$142 | \$142 | \$0 | 4.0% | \$64 | \$160 | \$158 | \$3 |
| | 6.0% | \$0 nr | \$142 | \$142 | \$0 | 6.0% | \$0 nr | \$160 | \$160 | \$0 |
| | 8.0% | \$0 nr | \$142 | \$142 | \$0 | 8.0% | \$0 nr | \$160 | \$160 | \$0 |
| 15-year | 4.0% | \$0 nr | \$142 | \$142 | \$0 | 4.0% | \$0 nr | \$160 | \$160 | \$0 |
| | 6.0% | \$0 nr | \$142 | \$142 | \$0 | 6.0% | \$0 nr | \$160 | \$160 | \$0 |
| | 8.0% | \$0 nr | \$142 | \$142 | \$0 | 8.0% | \$0 nr | \$160 | \$160 | \$0 |

Notes:

nr = student loans are not refinanced.

^{*} Total savings = Remaining total standard payments - Total payments if refinanced. Values used to calculate "Total savings" are not shown.

^{**} Monthly savings = Monthly standard payment - Monthly payment if refinanced.

Exhibit A9

Estimated Monthly Savings from Refinancing for a Representative 4-Year Undergraduate Student, by Cohort

| Term length | APR | Total savings* | 2012 Cohort | | | APR | Total savings* | 2016 Cohort | | |
|-----------------|-------------|----------------|--------------------------|-------------------------------|-------------------|-------------|----------------|--------------------------|-------------------------------|-------------------|
| | | | Monthly standard payment | Monthly payment if refinanced | Monthly savings** | | | Monthly standard payment | Monthly payment if refinanced | Monthly savings** |
| Original | 5.6% (avg.) | - | \$235 | - | - | 4.4% (avg.) | - | \$235 | - | - |
| 5-year | 4.0% | \$208 | \$235 | \$207 | \$28 | 4.0% | \$1,477 | \$235 | \$351 | (\$116) |
| | 6.0% | \$0 nr | \$235 | \$235 | \$0 | 6.0% | \$429 | \$235 | \$368 | (\$134) |
| | 8.0% | \$0 nr | \$235 | \$235 | \$0 | 8.0% | \$0 nr | \$235 | \$235 | \$0 |
| 10-year | 4.0% | \$0 nr | \$235 | \$235 | \$0 | 4.0% | \$0 nr | \$235 | \$235 | \$0 |
| | 6.0% | \$0 nr | \$235 | \$235 | \$0 | 6.0% | \$0 nr | \$235 | \$235 | \$0 |
| | 8.0% | \$0 nr | \$235 | \$235 | \$0 | 8.0% | \$0 nr | \$235 | \$235 | \$0 |
| 15-year | 4.0% | \$0 nr | \$235 | \$235 | \$0 | 4.0% | \$0 nr | \$235 | \$235 | \$0 |
| | 6.0% | \$0 nr | \$235 | \$235 | \$0 | 6.0% | \$0 nr | \$235 | \$235 | \$0 |
| | 8.0% | \$0 nr | \$235 | \$235 | \$0 | 8.0% | \$0 nr | \$235 | \$235 | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments - Total payments if refinanced. Values used to calculate "Total savings" are not shown.

** Monthly savings = Monthly standard payment - Monthly payment if refinanced.

Exhibit A10

Estimated Monthly Savings from Refinancing for a Representative Graduate Student, by Cohort

| Term length | 2012 Cohort | | | | | 2016 Cohort | | | | |
|-----------------|-------------|----------------|--------------------------|-------------------------------|-------------------|-------------|----------------|--------------------------|-------------------------------|-------------------|
| | APR | Total savings* | Monthly standard payment | Monthly payment if refinanced | Monthly savings** | APR | Total savings* | Monthly standard payment | Monthly payment if refinanced | Monthly savings** |
| Original | 5.6% (avg.) | - | \$691 | - | - | 4.4% (avg.) | - | \$676 | - | - |
| 5-year | 4.0% | \$1,276 | \$691 | \$532 | \$160 | 4.0% | \$7,654 | \$676 | \$953 | (\$278) |
| | 6.0% | \$65 | \$691 | \$657 | \$34 | 6.0% | \$4,809 | \$676 | \$1,001 | (\$325) |
| | 8.0% | \$0 nr | \$691 | \$691 | \$0 | 8.0% | \$1,878 | \$676 | \$1,050 | (\$374) |
| 10-year | 4.0% | \$0 nr | \$691 | \$691 | \$0 | 4.0% | \$1,963 | \$676 | \$524 | \$151 |
| | 6.0% | \$0 nr | \$691 | \$691 | \$0 | 6.0% | \$0 nr | \$676 | \$676 | \$0 |
| | 8.0% | \$0 nr | \$691 | \$691 | \$0 | 8.0% | \$0 nr | \$676 | \$676 | \$0 |
| 15-year | 4.0% | \$0 nr | \$691 | \$691 | \$0 | 4.0% | \$0 nr | \$676 | \$676 | \$0 |
| | 6.0% | \$0 nr | \$691 | \$691 | \$0 | 6.0% | \$0 nr | \$676 | \$676 | \$0 |
| | 8.0% | \$0 nr | \$691 | \$691 | \$0 | 8.0% | \$0 nr | \$676 | \$676 | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments - Total payments if refinanced. Values used to calculate "Total savings" are not shown.

** Monthly savings = Monthly standard payment - Monthly payment if refinanced.

Exhibit A11

Estimated Monthly Savings from Refinancing for a Representative Professional Student, by Cohort

| Term length | 2012 Cohort | | | | | 2016 Cohort | | | | |
|-----------------|-------------|----------------|--------------------------|-------------------------------|-------------------|-------------|----------------|--------------------------|-------------------------------|-------------------|
| | APR | Total savings* | Monthly standard payment | Monthly payment if refinanced | Monthly savings** | APR | Total savings* | Monthly standard payment | Monthly payment if refinanced | Monthly savings** |
| Original | 5.6% (avg.) | - | \$1,133 | - | - | 4.4% (avg.) | - | \$1,466 | - | - |
| 5-year | 4.0% | \$2,207 | \$1,133 | \$869 | \$263 | 4.0% | \$19,061 | \$1,466 | \$2,028 | (\$562) |
| | 6.0% | \$125 | \$1,133 | \$1,067 | \$65 | 6.0% | \$13,006 | \$1,466 | \$2,129 | (\$663) |
| | 8.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 8.0% | \$6,771 | \$1,466 | \$2,233 | (\$767) |
| 10-year | 4.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 4.0% | \$6,952 | \$1,466 | \$1,115 | \$351 |
| | 6.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 6.0% | \$0 nr | \$1,466 | \$1,466 | \$0 |
| | 8.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 8.0% | \$0 nr | \$1,466 | \$1,466 | \$0 |
| 15-year | 4.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 4.0% | \$0 nr | \$1,466 | \$1,466 | \$0 |
| | 6.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 6.0% | \$0 nr | \$1,466 | \$1,466 | \$0 |
| | 8.0% | \$0 nr | \$1,133 | \$1,133 | \$0 | 8.0% | \$0 nr | \$1,466 | \$1,466 | \$0 |

Notes:

nr = student loans are not refinanced.

* Total savings = Remaining total standard payments - Total payments if refinanced. Values used to calculate "Total savings" are not shown.

** Monthly savings = Monthly standard payment - Monthly payment if refinanced.

III. Value of Foregone Federal Benefits

Methodology for Estimating Foregone Federal Loan Benefits

The objective of [Section IV](#) is to estimate the foregone benefits of “repayment and forgiveness options that may be lost to a borrower of a federal student education loan who chooses to refinance.”⁷⁰ To accomplish this, one needs to quantify and compare the costs of multiple potential loan repayment obligations available to borrowers. Loan repayment programs vary in the required monthly payment, whether the payment varies over time, the total number of payments, and the total dollar sum of payments. To account for these asymmetries, we sought to answer the same question for each program: *How much would a hypothetical borrower be willing to pay to immediately fulfill the terms of this particular loan obligation?* In this context, an answer of \$20,000 would mean that, if a borrower were offered a choice between \$20,000 in cash and the immediate elimination of a particular student loan obligation, they would be equally satisfied with either choice. The difference between these dollar values for repayment terms offered by the most valuable federal repayment program and a typical state loan refinancing program is the foregone benefit of the federal loan program. If negative, this shows that the borrower gains a greater value from paying their loans through the most valuable federal repayment plan rather than refinancing through a state refinancing program.

The relevant equation for comparing the value of a sum of payments made over time is “present value,” which can be expressed with the following equation:

$$(1) \quad PV = \sum_{t=1}^T \frac{C_t}{(1+r)^t}$$

where t denotes the 1st, 2nd, etc., through the final monthly payment (a total of T payments). C_t is the student loan payment a student would make in period t . PV is a lump sum of dollars in the present ($t=0$), and r is the borrower’s discount rate. The discount rate is a measure of a borrower’s preference for a constant dollar amount in the present compared to the future. A higher discount rate indicates a stronger preference for dollars in the present. Theoretically, one can think of the discount rate as a combination of two components. The first is inflation, which implies that dollars in the future are less valuable than dollars in the present. The second is an individual borrower’s preference for dollars in the present net of inflation.

For the standard federal repayment program, $T=120$, as borrowers are obligated to make monthly payments for ten years and C_t is the same for all T time periods. For a borrower with \$30,000 in Direct Unsubsidized Loans who discounts dollars at an annual rate of 5% (including inflation), one can express C_0 for the standard federal (STD) repayment plan with the following equation:

$$(2) \quad PV^{STD} = \frac{\$345.24}{1.05^{1/12}} + \frac{\$345.24}{1.05^{2/12}} + \frac{\$345.24}{1.05^{3/12}} + \dots + \frac{\$345.24}{1.05^{120/12}} = \$32,147$$

For the borrower, the present value of the first payment, which is due one month in the future, is \$343.84, which is almost the same as the nominal dollar amount of \$345.24. In contrast, the present value of the last payment, which is the same dollar amount ten years in the future, is \$211.95. Calculating the present value of a stream of payments is straightforward. The only necessary assumption is the borrower’s discount rate. In the body of the report, [Exhibits 24](#) and [25](#) assumed an effective discount rate of 5.4%, where inflation was 2.4% and the borrower’s discount rate was 3.0%. This general approach follows the

⁷⁰ [Engrossed Second Substitute Senate Bill 6029, Chapter 62, Laws of 2018, Regular Session.](#)

WSIPP benefit cost model methodology,⁷¹ which uses discount rates between 2.0% and 5.0%. We set inflation at 2.4% to match the federal loan repayment estimator,⁷² which uses the Congressional Budget Office's estimate of inflation.⁷³

For a known principal balance and interest rate, computing the monthly payment for the Standard Federal Repayment plan—or any plan when the balance is paid off over a fixed time period and number of payments—is straightforward. One can compute the monthly payment for a 10-year payoff schedule (120 payments) using the formula below, where i represents the annual interest rate (APR) of the loan.⁷⁴

$$(3) \quad C_t^{STD} = \text{Principal} * \frac{\frac{i}{12}}{1 - \left(1 + \frac{i}{12}\right)^{-120}}$$

Income-Driven Repayment (IDR)

More assumptions are necessary for estimating the present value of a stream of payments for income-driven repayment (IDR) plans ($C_1 \dots C_T$), because C_t varies over time. The required monthly payment varies across loan programs, but the payment is typically a percentage of the borrower's monthly discretionary income. Monthly discretionary income is defined as Adjusted Gross Income (AGI) above 1.5 times the federal poverty threshold, which also varies across years and takes into account an individual's family size and state of residence in year t .⁷⁵ Some IDR plans, such as the Pay as You Earn (PAYE) plan, also cap the monthly payment as the minimum of 10.0% of discretionary income and the monthly payment a borrower would have paid under the standard federal repayment plan. In this case, the monthly payment is defined with the following equation:

$$(4) \quad C_t^{PAYE} = \text{MIN} \left(0.1 * \frac{AGI_t - 1.5 * FED_POVERTY_t}{12}, C_t^{STD} \right)$$

In 2018, for a non-married borrower with \$30,000 in Direct Unsubsidized whose AGI is \$30,000, the PAYE program monthly payment is expressed with the following equation:

$$(5) \quad C_t^{PAYE} = \text{MIN} \left(0.1 * \frac{30,000 - 18,210}{12}, 345.24 \right) = \text{MIN}(98.25, 345.24) = \mathbf{\$98.25}$$

If the borrower's income growth outpaces annual adjustments in the federal poverty threshold, then a borrower's loan payment will increase over time. An important characteristic of IDR plans is that a maximum T is defined, but making T payments does not ensure that a loan balance is paid off. Payments pegged to income will not necessarily repay a loan over any time horizon. For any period where a borrower's income implies a payment that is less than the loan interest accrued over the same period, the amount that a borrower owes will increase. Fulfilling repayment obligation through making T payments,

⁷¹ See 4.11b, "Discount Rates," of Washington State Institute for Public Policy. (May 2017). [Benefit-cost technical documentation](#). Olympia, WA: Author.

⁷² U.S. Department of Education. [Repayment estimator](#).

⁷³ [U.S. Inflation Calculator](#).

⁷⁴ An exception is loans where the monthly payment would be below \$50. With an APR of 6.8%, Equation (3) calculates a loan payment below \$50 for loans below \$4,500. U.S. Department of Education. [Understanding the standard repayment plan](#).

⁷⁵ Similar to online loan repayment calculators created by the Department of Education, we assume that the federal poverty threshold increases with inflation, at an annual rate of 2.4%.

even if T payments are insufficient to pay off the loan balance, is why loan forgiveness is a key feature of federal IDR programs. That said, it is theoretically possible that IDR plans could lead to larger monthly payments and earlier loan repayment. Most IDR plans cap the payment at what the borrower would have paid under the standard plan but the Revised Pay as Your Earn (REPAYE) program does not. A borrower whose income increased rapidly could *more rapidly* repay their loan than they would have under the standard plan.

Ultimately, holding loan characteristics constant, estimating the present value of a stream of IDR payments requires assumptions about changes in borrower income over time, which borrowers may not be able to forecast accurately. Our report assumed that borrower income grew at an annual rate of 5.0%. According to research on earnings using standard economic models, a rate of 5.0% is a reasonable characterization of average wage growth over the first 20 years of a career.⁷⁶ An advantage of choosing 5.0% was to accord with the IDR plan calculators that the department of education makes publicly available, which assume constant annual earnings growth of 5.0%.⁷⁷

⁷⁶ Polachek, S. (2007). *Earnings over the life cycle: The Mincer Earnings Function and its applications*. State University of New York.

⁷⁷ We were not able to calculate earnings growth directly for loan borrowers using the aggregate data we received from ERDC but approximations using data from Exhibit A15, Exhibit A16, and Exhibit A17 suggest that annual median income growth was around 10% (a total of 33% over three years) before accounting for inflation.

Comparing Present Value across Repayment Plans

For a concrete comparison of the present value of two repayment plans, consider a borrower who a) has \$30,000 in Direct Unsubsidized Loans with an interest rate of 6.8%, b) discounts dollars at an annual rate of 5.0% (including inflation), and c) has an adjusted gross income (AGI) of \$30,000 in 2018. The present value for loan repayment through the PAYE program when we assume 5.0% annual income growth is:

$$(6) \quad PV^{PAYE} = \frac{\$98.25}{1.05^{1/12}} + \frac{\$98.25}{1.05^{2/12}} + \frac{\$98.25}{1.05^{3/12}} + \dots + \frac{\$345.24}{1.05^{205/12}} + \dots + \frac{\$345.24}{1.05^{240/12}} = \mathbf{\$29,850}$$

For this borrower, starting with the 205th payment—the beginning of the 17th year of loan repayment—AGI reached a point such that 10.0% of discretionary income exceeded what the standard payment would have been. Therefore, the payment remained at this level until the repayment terms were fulfilled. For this borrower, the repayment terms would be fulfilled by reaching the maximum T (240 monthly payments). After 20 years of making payments, the remaining loan balance was approximately \$16,000, which would be forgiven.

While the nominal sum of payments was higher with PAYE compared to the standard plan (\$52,272 versus \$41,429), the present value of the stream of payments for PAYE was lower (\$29,850 versus \$32,717). This means that the borrower would be indifferent between a lump sum of \$29,850 in 2018 and the stream of payments required to fulfill the obligations of PAYE. In contrast, it would take a lump sum of \$32,717 to match the value of the stream of payments required for the standard plan. Therefore, the present value of the opportunity to select the PAYE plan compared to the standard plan for this borrower in 2018 dollars would be \$2,867 (= \$32,717 - \$29,850).

$$(7) \quad PV^{STD} - PV^{PAYE} = \$32,717 - \$29,850 = \mathbf{\$2,867}$$

To test the sensitivity of these results to alternative assumptions about discount rate and income growth over time, one can repeat the analysis with alternative income growth and discount rates. Using a 5.0% discount rate, an annual income growth rate of 5.8% would approximately equalize the values of PV^{STD} and PV^{PAYE} , because PV^{PAYE} would decrease to ~\$32,717. Note that the value of PV^{STD} would not be affected by a change in the annual rate of income growth.

If the borrower's discount rate were 1.1% points above inflation (3.5% effective discount rate), rather than 2.6% points above inflation (5.0% effective discount rate), the present values of PV^{STD} and PV^{PAYE} become approximately equivalent.⁷⁸ Borrowers with even lower discount rates would prefer the standard repayment plan.

Interest Subsidy and Taxes for Loan Forgiveness

Borrowers who receive loan forgiveness through participation in an income-driven repayment plan (IDR) must pay interest on the loan balance forgiven, unless they qualify for the Public Service Loan Forgiveness (PSLF) Program. The balance forgiven is treated as income, which means that borrowers pay the product of their marginal tax rate and the forgiven balance. This cost was not taken into account in our estimates of the foregone benefits of IDR plans for simplicity. Incorporating it would require assumptions about many unknown quantities. No borrowers have reached the point of qualifying for loan forgiveness (except

⁷⁸ More precisely, at a discount rate of 3.47%, the present values are \$35,056 for PAYE and \$35,052 for the standard plan.

for PSLF) under the most popular IDR plans (PAYE or REPAYE), and it is unclear what the marginal tax rates will be for qualifying borrowers between 10 and 20 years from now.

Results with Alternative Assumptions

For undergraduates, [Exhibit 15](#) in the main body of the report assumed \$17,100 in federal loans, which was the median cumulative federal loan debt for 2012 WA undergraduate degree completers. The mean cumulative federal loan debt for undergraduates, \$19,045, was fairly similar to the median. As an alternative, below we consider undergraduate borrowers with \$25,900 in federal loan debt. This is the 75th percentile among 4-year degree completers in 2012. Also, below we assume that the typical state refinancing program could offer an interest rate of 4.5% APR for a 10-year term, rather than the 6.0% assumed in the main body of the report. Everything else remains the same as [Exhibit 15](#). [Exhibit A12](#) shows the value of refinancing is higher when a state can offer lower interest rates and when borrowers have more loan debt. The potential value of refinancing is higher under these more aggressive assumptions. Note that these estimates, as before, do not take into account federal program benefits such as loan deferment and forbearance, nor do they account for private student loan debt.

Exhibit A12

Value of Income-Driven Repayment (IDR) Versus Refinancing Using Alternative Assumptions:
2012 Undergraduate Degree Completers

| 2013 income | PSLF-eligible borrower | | | PSLF-ineligible borrower | | |
|----------------|-----------------------------|-----------------------------------|--|-----------------------------|-----------------------------------|--|
| | Value of IDR payments | Value of refinance payments | Difference in value of payments* | Value of IDR payments | Value of refinance payments | Difference in value of payments* |
| \$10,000 | \$0 | \$25,000 | (\$25,000) | \$0 | \$25,000 | (\$25,000) |
| \$20,000 | \$3,500 | \$25,000 | (\$21,500) | \$10,200 | \$25,000 | (\$14,800) |
| \$30,000 | \$13,000 | \$25,000 | (\$12,000) | \$26,400 | \$25,000 | \$1,400 |
| \$40,000 | \$22,000 | \$25,000 | (\$3,000) | \$26,300 | \$25,000 | \$1,300 |
| \$50,000 | \$26,000 | \$25,000 | \$1,000 | \$26,200 | \$25,000 | \$1,200 |
| \$60,000 | \$26,200 | \$25,000 | \$1,200 | \$26,200 | \$25,000 | \$1,200 |

Notes:

* Difference in value of payments = Value of IDR payments - Value of refinance payments.

All values are in 2013 dollars, rounded to the nearest \$100, and reflect a borrower discount rate of 3% and 2.4% annual inflation. We assume all borrowers have \$25,900 in federal loan debt, with an APR of 5.5%. The values of the IDR payments are calculated based on the best available federal IDR plan. The values of the refinance payments are calculated under a hypothetical state program with a loan term of 10 years and APR of 4.5%.

Major loan forgiveness programs

As discussed in [Section IV](#), the federal government and Washington State offer a variety of loan forgiveness programs that vary based on borrower eligibility, loan eligibility, and the specific terms of forgiveness. [Exhibit A13](#) provides additional information on major federal forgiveness programs, and [Exhibit A14](#) describes some provided by Washington State.

Exhibit A13

Major Federal Loan Forgiveness Programs

| Forgiveness program | Borrower eligibility | Loan eligibility | Forgiveness terms |
|---------------------------------|--|---|---|
| Public Service Loan Forgiveness | Working full-time for a qualifying employer for ten years. | Direct ^a | Outstanding balance forgiven after 120 qualifying monthly payments while working full-time for a qualifying employer. |
| Teacher Loan Forgiveness | Highly qualified teachers who teach for five years at an agency that serves low-income students. | Direct & Stafford | Up to \$17,500 for “highly qualified” (i) math/science teachers at secondary level (ii) highly qualified special education teachers. Up to \$5,000 for teachers outside math/science/special ed. |
| NURSE Corps Loan Repayment | Licensed nurse who works for two years in “critical shortage facility.” | Direct, ^b Stafford, & Private ^b | 60% of total qualifying nursing educational loan balance. Additional 25% of total qualifying balance for optional third year of service. |
| National Health Service Corps | Licensed health care providers who work for two or more years at an eligible site. | Government or commercial loans made to student | Up to \$50,000 of loan forgiveness. “Students to Service” program offers doctors and dentists larger awards for at least three years of service. |
| Military College Loan Repayment | Fewer recent borrowers may be eligible, as some military branches have discontinued their program. | Direct, Stafford, PLUS | Army pays 1/3 of loans each year for three years, up to \$65,000 total. National Guard awards up to \$50,000 and requires minimum six years. Benefits vary by branch/program. |
| Perkins Loan Cancellation | Five years of work in public service. Fewer recent borrowers eligible, as Perkins Loan Program ended in 2017. | Perkins | Up to 100% of loans canceled, typically for five years of service. Approved borrowers see percentage of loans discharged incrementally for each year worked. Teachers can qualify by teaching certain student populations/subjects. |

Notes:

This exhibit is not a comprehensive list of all federal loan-forgiveness programs.

^a FFEL/Perkins (i.e. non-direct lending program) loans could become eligible through consolidation. Only payments made on the consolidated loans qualify.

^b Direct consolidation loans are eligible if the underlying loans were eligible. Private loans used for nursing education are potentially eligible.

Sources: U.S. Department of Education. [Forgiveness, cancellation, and discharge](#); U.S. Department of Health and Human Services. (2018). [NURSE Corps Loan Repayment Program: Fiscal year 2018 application and program guidelines](#). Rockville, Maryland: U.S. Department of Health and Human Services; and Health Resources & Services Administration. [Discover the benefits of loan repayment](#).

Exhibit A14

Major Washington State Loan Forgiveness Programs

| Forgiveness program | Borrower eligibility | Loan eligibility | Forgiveness terms |
|---|---|--|-------------------------------------|
| Federal-State Loan Repayment (funded with state and federal dollars) | All cohorts. Licensed health care providers who work for two years at an eligible site. Eligible providers are doctors, physician assistants, nurses, dentists (including hygienists), pharmacists, and midwives. | Government and private loans related to the borrower's education in their licensed area. | Up to \$70,000 of loan forgiveness. |
| Health Professional Loan Repayment (funded with state dollars) | All cohorts. Licensed health care professionals who work for three years at an eligible site. In addition to providers above, eligibility extends to psychologists, social workers, therapists, and mental health counselors. | Government and private loans related to the borrower's education in their licensed area. | Up to \$75,000 of loan forgiveness. |

Sample Selection and Business Rules for Section IV Exhibits

Population

The population of interest for the exhibits in [Section IV](#), and the associated appendix exhibits, consists of three mutually exclusive groups:

- 1) 2012 associate's degree completers from public Washington colleges (undergraduate 2-year)
- 2) 2012 bachelor's degree completers from public Washington colleges (undergraduate 4-year)
- 3) 2012 graduate or professional degree completers from a public Washington university (grad/professional)

Group (1) excluded associate's degree completers who earned an associate's degree from a public WA college before 2012 and associate's degree completers who earned a degree from a public 4-year public Washington university in or before 2012. Essentially, students in group (1) were students whose first—and highest—degree was an associate's degree earned in 2012.

Group (2) excluded bachelor's degree completers who had already earned a bachelor's degree from a public Washington university before 2012 or had earned a graduate/professional degree in or before 2012. Essentially, students in group (2) were students whose highest degree was a bachelor's degree earned in 2012.

Group (3) did not have similar exclusion rules. Essentially, students in group (3) were students who completed a graduate or professional degree in 2012.

Statistics

All loan debt statistics are cumulative loan debt. Statistics include year of completion and all prior years for associate's and bachelor's degree completers. For graduate or professional degree completers, loans are restricted to those incurred while enrolled as a graduate or professional student only.

Earnings and Employment Sector

Federal loan borrowers who work in the public sector for ten years while making loan payments are eligible to have the remaining balance of their federal loans forgiven through the Public Service Loan Forgiveness (PSLF) Program. The federal government defines "public sector" by employer characteristics, not the nature of an individual employee's work. Specifically, public service employment means that one is employed by one of the following:

- 1) Government organizations at any level (federal, state, local, or tribal);
- 2) Not-for-profit organizations that are tax-exempt under 503(c)(3) of Internal Revenue Code;
- 3) Other types of not-for-profit organizations that are not tax-exempt under 503(c)(3) if their primary purpose is to provide one of the following services: emergency management; military service; public safety; law enforcement; public interest law services; early childhood education; public service for individuals with disabilities; public service for the elderly; public health; public education; public library services; or other school-based services.⁷⁹

The necessary data to conclusively identify "public sector employees" using the loan forgiveness eligibility definition was not available. Our goal is a reasonable approximation of the federal definition. Public sector

⁷⁹ U.S. Department of Education. [Public Service Loan Forgiveness Program](#).

employees are defined as workers who were employed by a publicly owned organization or whose primary occupation fell into one of the following North American Industry Classification System (NAICS) categories in 2013 and 2016: 6111, 6113, or 622. This approach captured public sector employees and many private sector employees in health and education who would qualify for PSLF and some private sector employees in health and education who would not qualify for PSLF.

In order to be able to track earnings within sectors over time, we excluded borrowers whose employment patterns would complicate the analysis. We excluded borrowers who did not report earnings in 2013 *and* 2016 and borrowers who were not assigned to the same employment sector (i.e., public/private) in 2013 and 2016. Borrowers who returned to school were also excluded. Within any given year, individuals are assigned to the public sector if any of the following were true:

- They were employed full-time in the public sector,
- The majority of their earnings were in public sector employment, or
- The majority of their hours were in public sector employment.

Exhibits A15-A17 contain earnings statistics for 2012 associate degree completers (A15), bachelor degree completers (A16), and graduate/professional degree completers (A17). Each exhibit looks at borrowers following graduation who were subsequently employed in Washington in 2013 and 2016. These exhibits show how income levels and income growth varied between public sector and private sector employees. They focus on the same income categories used in the analyses of how the value of federal repayment programs vary by borrower income. Our sample selection strategy excluded borrowers who moved out of state, were not employed in both 2013 and 2016, and/or switched between public and private employment sectors between 2013 and 2016.

Comparisons across exhibits shows how income varies for associate, bachelor, and graduate degree completers. Incomes tended to be highest for graduate/professional degree completers, second highest for bachelor degree completers, and third highest for associate degree completers. Also, as one would expect, incomes tended to be higher in 2016 compared to 2013.

Exhibit A15

Public College Associate Degree Completers (2012)
Any Federal Loan Debt, Employed in WA

| | Public sector employees (N = 445) | | Private sector employees (N = 1,650) | |
|-------------------|--------------------------------------|----------------|---|----------------|
| | 2013 income | 2016 income | 2013 income | 2016 income |
| \$1-\$9,999 | 7% | 4% | 13% | 10% |
| \$10,000-\$19,999 | 11% | 4% | 18% | 10% |
| \$20,000-\$29,999 | 11% | 9% | 22% | 12% |
| \$30,000-\$39,999 | 16% | 11% | 18% | 19% |
| \$40,000-\$49,999 | 15% | 16% | 13% | 16% |
| \$50,000-\$59,999 | 16% | 16% | 8% | 12% |
| \$60,000+ | 25% | 41% | 9% | 21% |
| | 100% | 100% | 100% | 100% |

Exhibit A16

Public University Undergraduate Degree Completers (2012)
Any Federal Loan Debt, Employed in WA

| | Public sector employees (N = 1,134) | | Private sector employees (N = 4,312) | |
|-------------------|--|----------------|---|----------------|
| | 2013 income | 2016 income | 2013 income | 2016 income |
| \$1-\$9,999 | 9% | 4% | 11% | 7% |
| \$10,000-\$19,999 | 13% | 3% | 16% | 7% |
| \$20,000-\$29,999 | 17% | 7% | 21% | 10% |
| \$30,000-\$39,999 | 25% | 12% | 19% | 15% |
| \$40,000-\$49,999 | 16% | 28% | 13% | 15% |
| \$50,000-\$59,999 | 7% | 21% | 9% | 12% |
| \$60,000+ | 13% | 25% | 12% | 34% |
| | 100% | 100% | 100% | 100% |

Exhibit A17

Public University Grad/Professional Degree Completers (2012)
Any Federal Loan Debt, Employed in WA

| | Public sector employees (N = 895) | | Private sector employees (N = 911) | |
|-------------------|--------------------------------------|----------------|---------------------------------------|----------------|
| | 2013 income | 2016 income | 2013 income | 2016 income |
| \$1-\$9,999 | 4% | 2% | 6% | 3% |
| \$10,000-\$19,999 | 4% | 2% | 5% | 2% |
| \$20,000-\$29,999 | 5% | 3% | 7% | 3% |
| \$30,000-\$39,999 | 10% | 5% | 11% | 6% |
| \$40,000-\$49,999 | 20% | 10% | 13% | 9% |
| \$50,000-\$59,999 | 32% | 20% | 12% | 9% |
| \$60,000+ | 26% | 58% | 48% | 69% |
| | 100% | 100% | 100% | 100% |

Exhibits A18-A20 follow the same individuals as the previous three exhibits. The only difference is that, within each employment sector/income category, borrowers are disaggregated by the amount of cumulative federal loan debt they accumulated during degree completion. For example, note that the sum of column n's for public sector employees in Exhibit A18 is equivalent to the public sector "n" from Exhibit A15 (330+108+7=445). Disaggregating earnings by loan debt provides a more detailed view of how degree completion, earnings, borrowing, and sector of employment are related in Washington. For example, one can see that few undergraduate degree completers employed in Washington borrowed \$40,000 or more. The vast majority of 2012 undergraduates completing degrees from public colleges accumulated less than \$40,000 in federal loan debt.

Exhibit A18

Cumulative Federal Loan Debt by Income, Occupational Sector:
Public College Associate Degree Completers (2012)
Employed in WA in 2013 & 2016

| 2013 income | Public sector employees | | | Private sector employees | | |
|-------------------|---|--|----------------------------------|---|--|-----------------------------------|
| | Borrowed \$1- \$19,000 (n = 330) | Borrowed \$20,000- \$39,000 (n = 108) | Borrowed \$40,000+ (n = 7) | Borrowed \$1- \$19,000 (n = 1,267) | Borrowed \$20,000- \$39,000 (n = 369) | Borrowed \$40,000+ (n = 14) |
| \$1-\$9,999 | 7% | 6% | 0% | 14% | 12% | 7% |
| \$10,000-\$19,999 | 11% | 10% | 0% | 18% | 18% | 7% |
| \$20,000-\$29,999 | 12% | 9% | 0% | 23% | 17% | 14% |
| \$30,000-\$39,999 | 17% | 14% | 14% | 18% | 18% | 21% |
| \$40,000-\$49,999 | 15% | 13% | 14% | 12% | 14% | 14% |
| \$50,000-\$59,999 | 17% | 14% | 29% | 7% | 11% | 29% |
| \$60,000+ | 22% | 33% | 43% | 8% | 11% | 7% |
| | 100% | 100% | 100% | 100% | 100% | 100% |
| 2016 income | Borrowed \$1- \$19,000 (n = 330) | Borrowed \$20,000- \$39,000 (n = 108) | Borrowed \$40,000+ (n = 7) | Borrowed \$1- \$19,000 (n = 1,267) | Borrowed \$20,000- \$39,000 (n = 369) | Borrowed \$40,000+ (n = 14) |
| \$1-\$9,999 | 4% | 5% | 0% | 10% | 9% | 14% |
| \$10,000-\$19,999 | 3% | 6% | 0% | 9% | 13% | 14% |
| \$20,000-\$29,999 | 8% | 10% | 14% | 13% | 10% | 14% |
| \$30,000-\$39,999 | 12% | 7% | 14% | 20% | 17% | 0% |
| \$40,000-\$49,999 | 18% | 10% | 0% | 15% | 17% | 21% |
| \$50,000-\$59,999 | 17% | 16% | 14% | 13% | 11% | 7% |
| \$60,000+ | 39% | 45% | 57% | 20% | 24% | 29% |
| | 100% | 100% | 100% | 100% | 100% | 100% |

Notes:

Cumulative federal loan debt is the sum of loan debt from all federal lending programs, excluding PLUS loans made to undergraduates' parents. The category \$1-\$19,000 includes borrowers whose cumulative federal loan debt was between \$1-\$19,999, and the \$20,000-\$39,000 category includes borrowers whose debt was between \$20,000-\$39,999. Public sector employees were employed by a publicly owned organization or whose primary occupation fell into one of the following NAICS categories in 2013 and 2016: 6111, 6113, or 622.

Exhibit A19

Cumulative Federal Loan Debt by Income, Occupational Sector:
Public University Undergraduate Degree Completers (2012)
Employed in WA in 2013 & 2016

| 2013 income | Public sector employees | | | Private sector employees | | |
|-------------------|---|--|-----------------------------------|---|--|------------------------------------|
| | Borrowed \$1- \$19,000 (n = 623) | Borrowed \$20,000- \$39,000 (n = 413) | Borrowed \$40,000+ (n = 98) | Borrowed \$1- \$19,000 (n = 2,576) | Borrowed \$20,000- \$39,000 (n = 1,521) | Borrowed \$40,000+ (n = 215) |
| \$1-\$9,999 | 12% | 5% | 10% | 11% | 12% | 12% |
| \$10,000-\$19,999 | 13% | 13% | 10% | 16% | 15% | 15% |
| \$20,000-\$29,999 | 17% | 17% | 16% | 21% | 20% | 24% |
| \$30,000-\$39,999 | 23% | 27% | 30% | 19% | 18% | 13% |
| \$40,000-\$49,999 | 15% | 17% | 16% | 13% | 13% | 16% |
| \$50,000-\$59,999 | 7% | 7% | 9% | 9% | 8% | 8% |
| \$60,000+ | 13% | 13% | 8% | 11% | 13% | 12% |
| | 100% | 100% | 100% | 100% | 100% | 100% |
| 2016 income | Borrowed \$1- \$19,000 (n = 623) | Borrowed \$20,000- \$39,000 (n = 413) | Borrowed \$40,000+ (n = 98) | Borrowed \$1- \$19,000 (n = 2,756) | Borrowed \$20,000- \$39,000 (n = 1,521) | Borrowed \$40,000+ (n = 215) |
| \$1-\$9,999 | 5% | 3% | 7% | 7% | 7% | 9% |
| \$10,000-\$19,999 | 4% | 3% | 2% | 7% | 7% | 6% |
| \$20,000-\$29,999 | 8% | 6% | 5% | 10% | 10% | 11% |
| \$30,000-\$39,999 | 11% | 13% | 9% | 16% | 14% | 13% |
| \$40,000-\$49,999 | 27% | 29% | 33% | 15% | 15% | 19% |
| \$50,000-\$59,999 | 19% | 22% | 21% | 11% | 13% | 12% |
| \$60,000+ | 26% | 23% | 22% | 34% | 34% | 30% |
| | 100% | 100% | 100% | 100% | 100% | 100% |

Notes:

Cumulative federal loan debt is the sum of loan debt from all federal lending programs, excluding PLUS loans made to undergraduates' parents. The category \$1-\$19,000 includes borrowers whose cumulative federal loan debt was between \$1-\$19,999, and the \$20,000-\$39,000 category includes borrowers whose debt was between \$20,000-\$39,999. Public sector employees were employed by a publicly owned organization or whose primary occupation fell into one of the following NAICS categories in 2013 and 2016: 6111, 6113, or 622.

Exhibit A20

Cumulative Grad/Professional Federal Loan Debt by Income, Occupational Sector:
Public University Graduate/Professional Degree Completers (2012)
Employed in WA in 2013 & 2016

| 2013 income | Public sector employees | | | Private sector employees | | |
|-------------------|---|--|------------------------------------|---|--|------------------------------------|
| | Borrowed \$1- \$19,000 (n = 243) | Borrowed \$20,000- \$39,000 (n = 338) | Borrowed \$40,000+ (n = 314) | Borrowed \$1- \$19,000 (n = 201) | Borrowed \$20,000- \$39,000 (n = 264) | Borrowed \$40,000+ (n = 446) |
| \$1-\$9,999 | 5% | 3% | 3% | 6% | 5% | 6% |
| \$10,000-\$19,999 | 5% | 3% | 4% | 3% | 5% | 5% |
| \$20,000-\$29,999 | 4% | 4% | 7% | 9% | 8% | 5% |
| \$30,000-\$39,999 | 11% | 11% | 8% | 14% | 12% | 9% |
| \$40,000-\$49,999 | 22% | 22% | 17% | 12% | 17% | 10% |
| \$50,000-\$59,999 | 28% | 34% | 32% | 13% | 13% | 11% |
| \$60,000+ | 26% | 22% | 30% | 42% | 41% | 54% |
| | 100% | 100% | 100% | 100% | 100% | 100% |
| 2016 income | Borrowed \$1- \$19,000 (n = 243) | Borrowed \$20,000- \$39,000 (n = 338) | Borrowed \$40,000+ (n = 314) | Borrowed \$1- \$19,000 (n = 201) | Borrowed \$20,000- \$39,000 (n = 264) | Borrowed \$40,000+ (n = 446) |
| \$1-\$9,999 | 2% | 2% | 3% | 3% | 3% | 2% |
| \$10,000-\$19,999 | 1% | 3% | 1% | 2% | 3% | 2% |
| \$20,000-\$29,999 | 3% | 3% | 3% | 3% | 4% | 2% |
| \$30,000-\$39,999 | 6% | 4% | 6% | 7% | 5% | 6% |
| \$40,000-\$49,999 | 10% | 11% | 9% | 9% | 12% | 7% |
| \$50,000-\$59,999 | 19% | 26% | 15% | 11% | 9% | 8% |
| \$60,000+ | 59% | 52% | 63% | 65% | 64% | 74% |
| | 100% | 100% | 100% | 100% | 100% | 100% |

Notes:

Cumulative federal loan debt is the sum of loan debt from federal lending programs accrued during graduate/professional school (undergraduate debt omitted). The category \$1-\$19,000 includes borrowers whose cumulative federal loan debt was between \$1-\$19,999, and the \$20,000-\$39,000 category includes borrowers whose debt was between \$20,000-\$39,999. Public sector employees were employed by a publicly owned organization or whose primary occupation fell into one of the following NAICS categories in 2013 and 2016: 6111, 6113, or 622.

[Exhibit A21](#) contains the same information as [Exhibits A18-A20](#). The main difference is that percentages are calculated using a different denominator (n). Rather than calculating percentages within employment sector/loan borrowing columns—i.e., using a measure of *relative* prevalence—[Exhibit A21](#) uses the denominator (n) for all borrowers completing the same degree (associate's=2,095, bachelor's=5,446, and graduate/professional=1,806). [Exhibit A21](#) attempts to capture and compare the borrowing and subsequent year earnings landscapes for degree completers. For 2012 associate degree completers, the heaviest concentration was borrowers with less than \$20,000 in debt who worked in the private sector and earned \$20,000-\$30,000 in 2013. For 2012 bachelor degree completers, the heaviest concentration was similar to associate degree completers, but more borrowers had between \$20,000 and \$40,000 in debt. Compared to undergraduate degree completers, graduate/professional degree completers tended to earn more, borrow more, and work in the public sector at higher rates.

Exhibit A21

Income and Cumulative Federal Borrowing for 2012 Degree Completers by Degree Completed, Separately by Public and Private Sector Workers

| 2013 income | Public sector workers | | | Private sector workers | | |
|--------------------------------------|------------------------------|-----------------------------------|-----------------------|------------------------------|-----------------------------------|-----------------------|
| | Borrowed \$1- \$19,000 | Borrowed \$20,000- \$39,000 | Borrowed \$40,000+ | Borrowed \$1- \$19,000 | Borrowed \$20,000- \$39,000 | Borrowed \$40,000+ |
| (A) Associate's n = 2,095 | n = 330 | n = 108 | n = 7 | n = 1,267 | n = 369 | n = 14 |
| < \$10,000 | 1.1% | 0.3% | 0.0% | 8.4% | 2.1% | 0.0% |
| \$10,000 - \$19,999 | 1.7% | 0.5% | 0.0% | 10.7% | 3.1% | 0.0% |
| \$20,000 - \$29,999 | 1.8% | 0.5% | 0.0% | 13.9% | 3.1% | 0.1% |
| \$30,000 - \$39,999 | 2.6% | 0.7% | 0.0% | 11.0% | 3.2% | 0.1% |
| \$40,000 - \$49,999 | 2.4% | 0.7% | 0.0% | 7.5% | 2.4% | 0.1% |
| \$50,000 - \$59,999 | 2.7% | 0.7% | 0.1% | 4.0% | 1.9% | 0.2% |
| \$60,000+ | 3.4% | 1.7% | 0.1% | 4.9% | 1.9% | 0.0% |
| (B) Bachelor's n = 5,446 | n = 623 | n = 413 | n = 98 | n = 2,576 | n = 1,521 | n = 215 |
| < \$10,000 | 1.4% | 0.4% | 0.2% | 5.1% | 3.3% | 0.5% |
| \$10,000 - \$19,999 | 1.5% | 1.0% | 0.2% | 7.5% | 4.2% | 0.6% |
| \$20,000 - \$29,999 | 2.0% | 1.3% | 0.3% | 9.9% | 5.6% | 0.9% |
| \$30,000 - \$39,999 | 2.6% | 2.1% | 0.5% | 9.1% | 5.0% | 0.5% |
| \$40,000 - \$49,999 | 1.7% | 1.3% | 0.3% | 6.0% | 3.7% | 0.6% |
| \$50,000 - \$59,999 | 0.8% | 0.6% | 0.2% | 4.3% | 2.4% | 0.3% |
| \$60,000+ | 1.5% | 1.0% | 0.1% | 5.4% | 3.7% | 0.5% |
| (C) Grad/prof. n = 1,806 | n = 243 | n = 338 | n = 314 | n = 201 | n = 264 | n = 446 |
| < \$10,000 | 0.6% | 0.6% | 0.6% | 0.7% | 0.7% | 1.5% |
| \$10,000 - \$19,999 | 0.6% | 0.6% | 0.6% | 0.4% | 0.7% | 1.3% |
| \$20,000 - \$29,999 | 0.6% | 0.8% | 1.3% | 1.0% | 1.1% | 1.2% |
| \$30,000 - \$39,999 | 1.4% | 2.1% | 1.3% | 1.6% | 1.7% | 2.2% |
| \$40,000 - \$49,999 | 3.0% | 4.2% | 2.9% | 1.3% | 2.5% | 2.4% |
| \$50,000 - \$59,999 | 3.8% | 6.4% | 5.5% | 1.5% | 1.8% | 2.8% |
| \$60,000+ | 3.4% | 4.0% | 5.2% | 4.7% | 6.0% | 13.3% |

Note:

Percentages sum to 100% for each panel (associate's, bachelor's, and graduate/professional).

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