Student Loan Payments

Evidence from 4 Million Families

JPMorgan Chase & Co.

INSTITUTE

Abstract

Student loan debt has more than doubled over the last ten years, totaling $1.5 trillion and affecting 45 million borrowers by the end of 2018. In this report, the JPMorgan Chase Institute uses administrative banking data to assess student loan payments in conjunction with other household financial metrics, including income, spending, and non-student loan debt payments. We analyze checking account activity from over four million families that made student loan payments between 2012 and 2018 to understand how student loan payments fit into families' broader financial lives.

We find that the median family in our sample spends 5.5 percent of monthly take-home income on student loan payments, with one in four spending more than 11 percent; these numbers are even higher for young and low-income families. Just 54 percent of families in our sample make payments in more than 90 percent of months, a lower consistency than observers may expect, and lower than the same measure for mortgage and auto loan payments. In addition to publishing new summary statistics around student loan payments, we also generate two event studies, centered on the first and last observed student loan payments, respectively. We find that families tend to start making student loan payments following increases in labor income and liquid assets. Similarly, both of these metrics decrease on average following the final observed student loan payment, though this masks considerable variation across families. Altogether, our results offer new insights into student loan payment patterns in conjunction with other observed financial behaviors, and contribute to the ongoing debate regarding student loan repayment structure.

About the Institute

The JPMorgan Chase Institute is harnessing the scale and scope of one of the world's leading firms to explain the global economy as it truly exists. Drawing on JPMorgan Chase's unique proprietary data, expertise, and market access, the Institute develops analyses and insights on the inner workings of the economy, frames critical problems, and convenes stakeholders and leading thinkers.

The mission of the JPMorgan Chase Institute is to help decision makers—policymakers, businesses, and nonprofit leaders—appreciate the scale, granularity, diversity, and interconnectedness of the global economic system and use timely data and thoughtful analysis to make more informed decisions that advance prosperity for all.

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In this report, the JPMorgan Chase Institute provides a high-frequency cash flow perspective on student loan payments observed out of a universe of 39 million checking accounts.

Student loan debt is the fastest growing household debt category, having more than doubled over the last ten years to $1.5 trillion in 2018, second only to mortgage debt, and affecting 45 million borrowers. Although the financial returns from a higher education degree over a lifetime typically exceed the costs, roughly 22 percent of student loan borrowers are in default. As a result, some have framed the "student loan crisis" as a crisis of student loan repayment rather than student loan debt. Since 2009 a range of income-driven repayment options has emerged to mitigate the financial burden for families by better aligning repayment obligations with their ability to pay.

A major complication in policymakers' ability to propose promising solutions is the lack of data on how families—not just individual borrowers—are shouldering the burden of student loan repayment and the impact of student loan debt on other financial outcomes. The central challenge is that student loan payments and debt information are difficult to observe in conjunction with other financial outcomes, such as income, spending, and other debt payments, and certainly not on a high-frequency basis for large samples.

With this report, the JPMorgan Chase Institute aims to describe how student loan payments fit into the context of families' larger financial lives. We offer the debate insight into a new, high-frequency cash flow perspective on student loan payments and how they relate to a family's income, liquid assets, spending, and other debt payments. This perspective, based on student loan payment transactions observed out of a universe of 39 million Chase checking accounts between October 2012 and July 2018, is novel not just for its large sample size, but also its visibility into private and federal student loan payments (including any fees and fines), alongside income, spending, liquid assets, and other debt payments. In addition, this data asset is distinct in terms of its family perspective, which allows us to take into consideration the potential for a family to be making payments on multiple student loans and on behalf of other borrowers. This is an important, but often overlooked or hidden piece of the student loan repayment picture, given that roughly 19 percent of individuals report receiving help from others to pay off their student loans.

With this new data asset, we aim to answer five key questions:

1. What share of take-home income are families spending on student loan payments?

2. How does the financial burden of student loan payments differ across demographic groups?

3. How consistently do families repay student loans, and how volatile are repayment amounts?

4. In what ways do student loan payments differ from other types of loan payments, notably auto loan and mortgage payments?

5. How do student loan payments fluctuate with income, liquid assets, and expenditures?
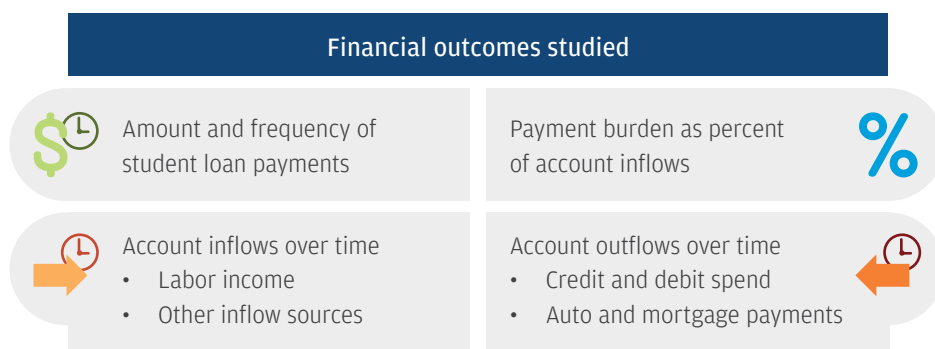
Data Asset

For this study, we assembled several distinct data assets from an overall sample of JPMorgan Chase families that made student loan payments from their Chase checking accounts.
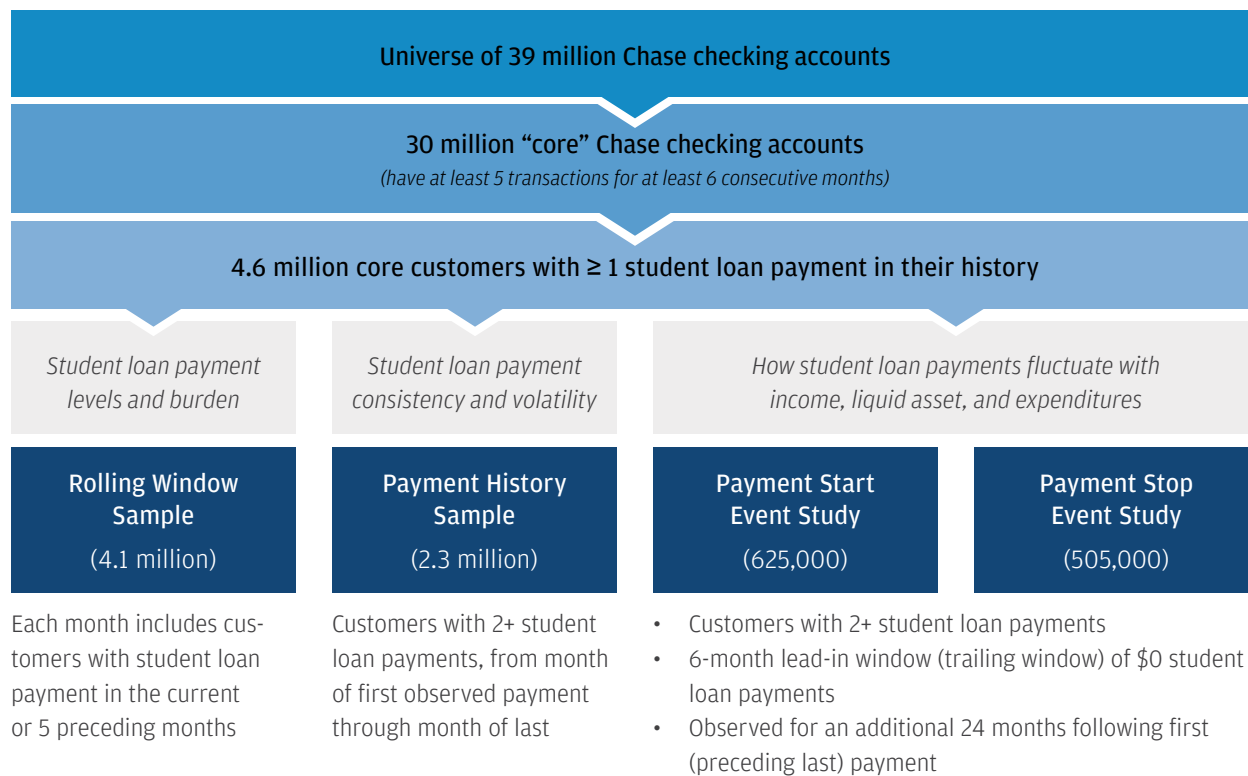
We began with a universe of 39 million families with Chase checking accounts between October 2012 and July 2018.

From this universe, we constructed a subset of 30 million "core" accounts for which we observe sufficient activity to consider the account a primary financial vehicle for the family. From these core accounts, we identified 4.6 million families who have made at least one student loan payment out of their Chase checking account.

The data assets used for analysis were created from this base of 4.6 million families. Each sample uses different inclusion criteria and serves a different analytical purpose, described in the below graphic. For additional details, see the Data Asset and Methodology section.

Financial outcomes studied

Amount and frequency of student loan payments	Payment burden as percent of account inflows
Account inflows over time • Labor income • Other inflow sources	Account outflows over time • Credit and debit spend • Auto and mortgage payments

Demographic views of the above financial outcomes are also studied, with segmentation by age and gender of the primary account holder, and by gross income (annual).

Universe of 39 million Chase checking accounts

30 million "core" Chase checking accounts
(have at least 5 transactions for at least 6 consecutive months)

4.6 million core customers with ≥ 1 student loan payment in their history

Student loan payment levels and burden	*Student loan payment consistency and volatility*	*How student loan payments fluctuate with income, liquid asset, and expenditures*	
Rolling Window Sample (4.1 million)	**Payment History Sample** (2.3 million)	**Payment Start Event Study** (625,000)	**Payment Stop Event Study** (505,000)

Each month includes customers with student loan payment in the current or 5 preceding months

Customers with 2+ student loan payments, from month of first observed payment through month of last

• Customers with 2+ student loan payments
• 6-month lead-in window (trailing window) of $0 student loan payments
• Observed for an additional 24 months following first (preceding last) payment

Finding One

The typical family's median student loan payment is $179 per month or 5.5 percent of take-home income in months with positive payments. One in four families spend more than 11 percent of their take-home income on student loans.

Student loan payment amount

Student loan payment burden

Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018.

Source: JPMorgan Chase Institute

Finding Two

Younger and low-income families are most burdened by student loan payments, but there is no material difference in burden by male versus female account holders.

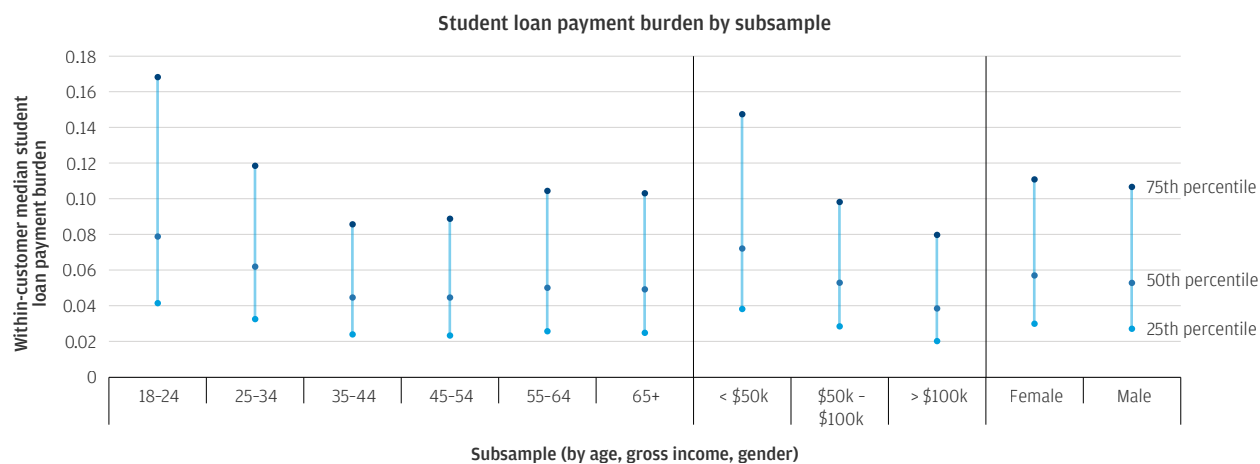**Student loan payment burden by subsample**

Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018.

Source: JPMorgan Chase Institute

Student Loan Payments: Evidence from 4 Million Families

Finding Three

While overall 54 percent of families make consistent student loan payments, low-income families are less likely to make consistent loan payments (44 percent) compared to high-income families (63 percent).

Distribution of fraction of months with positive student loan payments, by gross income
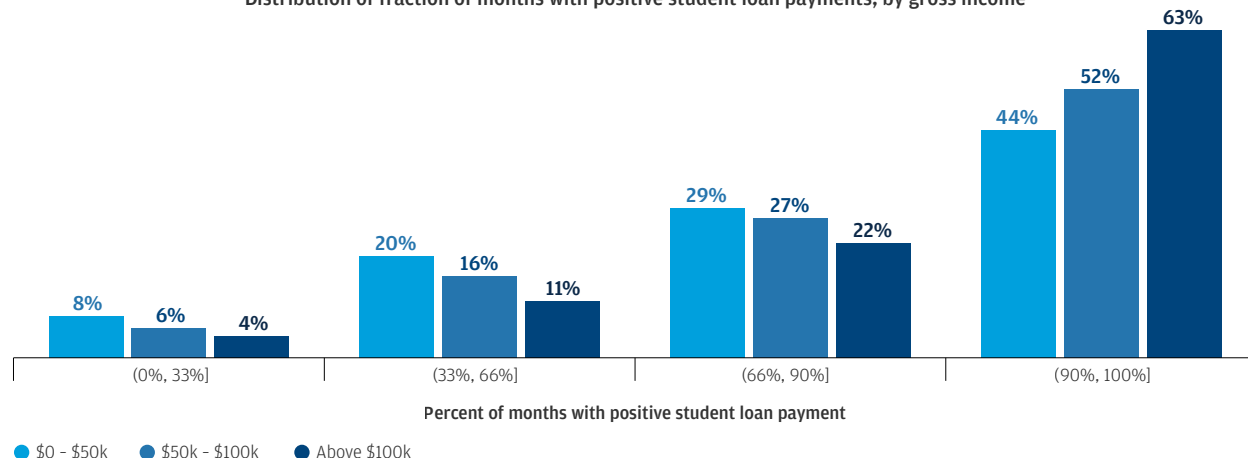
Percent of months with positive student loan payment

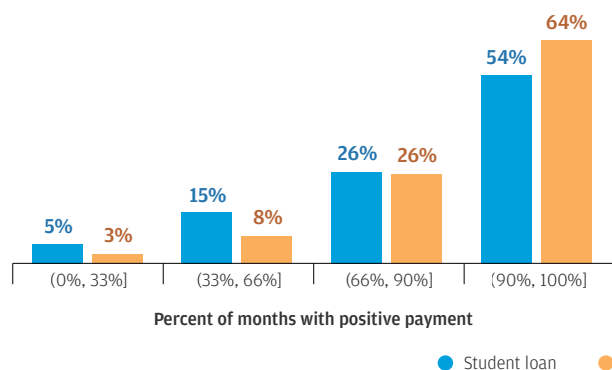● $0 - $50k   ● $50k - $100k   ● Above $100k

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment. Gross income estimated via JPMC Institute Income Estimate (IIE) version 1.0.
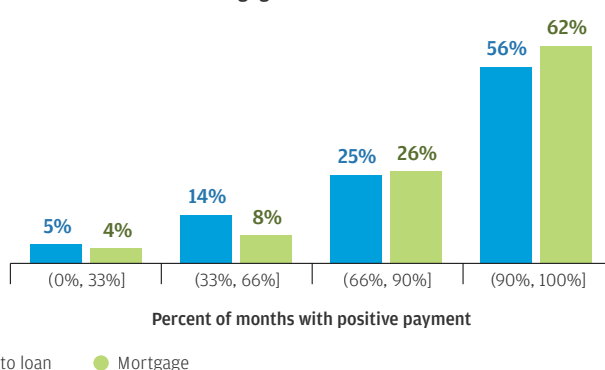
Source: JPMorgan Chase Institute

Finding Four

Among families actively paying multiple loans, the proportion making consistent payments is lower for student loans than auto loans (10 percentage point difference) and mortgages (6 percentage point difference).

Distribution of fraction of months with positive payments, auto loans vs. student loans

Distribution of fraction of months with positive payments, mortgage vs. student loans

Percent of months with positive payment

Percent of months with positive payment

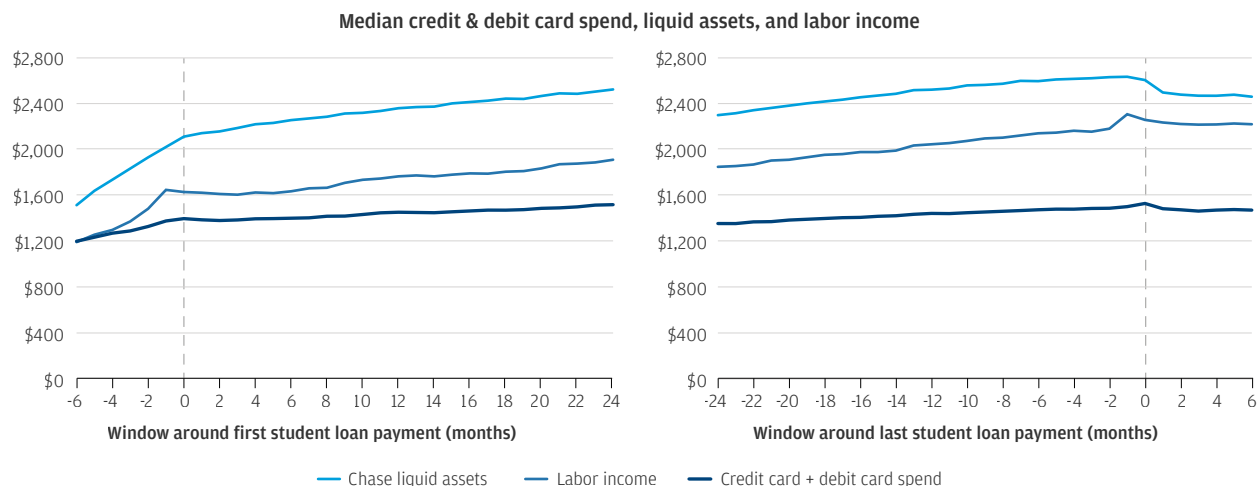● Student loan   ● Auto loan   ● Mortgage

Sample of accounts with at least two student loan payments and at least two other debt payments (auto loan on the left, mortgage on the right). Accounts are included for all months between first and last observed loan payment within October 2012 through July 2018.

Source: JPMorgan Chase Institute

Finding Five

Income, liquid assets, and expenditures increase sharply prior to starting student loan payments and decrease after stopping student loan payments.

Median credit & debit card spend, liquid assets, and labor income

Window around first student loan payment (months)

Window around last student loan payment (months)

— Chase liquid assets — Labor income — Credit card + debit card spend

The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

Taken together, our insights from this new, high-frequency lens into student loan repayment behavior have important implications for policymakers, financial institutions, higher education institutions, and employers. There are important segments of the population who are still significantly burdened by student loan payments, especially younger and lower-income account-holders, despite the availability of income-driven repayment programs. In particular, student loan payments are sensitive to large income changes, and may lack sufficient mechanisms to adjust payments to accommodate income fluctuations. Insofar as student loan payments are less consistent and more volatile than auto loan and mortgage payments, families may be benefiting from the greater leniency that exists with student loan repayment compared to other loan types. Still, it remains to be seen whether the negative consequences of this lower consistency will outweigh the benefits of greater leniency. Overall, there may be better ways to structure or implement student loan repayment plans that would ensure that families are not over-burdened and are able to make consistent payments. Revisiting underwriting and federal student aid criteria and considerations might help address the root of the student loan repayment problem. More broadly, colleges and universities, employers, and financial institutions have a role to play in helping borrowers manage their student loan debt.

Introduction

Student loan debt has more than doubled over the last ten years, totaling $1.5 trillion and affecting 45 million borrowers by the end of 2018, second only to mortgage debt (NYFed Quarterly Report on Consumer Credit and Debt). It is the fastest-growing debt category and represented 11 percent of household debt (roughly $33,000 per borrower) in 2018 compared to 5 percent ($19,000) in 2008 (Federal Reserve Bank of New York, 2019; U.S. Department of Education, 2019). In fact, the portion of families with a student loan has grown from 12 percent in 2001 to 22 percent in 2016, and 13 percent of families were making payments on student loans in 2016 (Federal Reserve Board, 2017). This growth is due to both the real growth in the costs of higher education and increased enrollment in higher education, especially among students with a lower ability to pay (Looney and Yannelis, 2015).

Although the financial returns from a higher education degree over a lifetime typically exceed the costs, the standard student loan mandates repayment in the ten years following a student's graduation, typically a phase of a borrower's working life when her income is relatively low and volatile (Dynarski, 2014). According to the Survey of Consumer Finances (SCF), in 2016 the median family with a student loan spent more than 3 percent of its income on student loan payments. Student loan repayment is said to be causing individuals to delay home purchasing and constrain their occupational choices

(Mezza et al., 2015; Rothstein and Rouse, 2011). With roughly 22 percent of federal student loan borrowers in default, some have framed the "student loan crisis" as a crisis of student loan repayment rather than student loan debt (Dynarksi, 2014).

In light of concern over the financial toll of student loan debt, since 2009 a range of income-driven repayment options has emerged to allow borrowers to limit how much they pay as a percent of discretionary income (10-15 percent) and to qualify for loan forgiveness after 20-25 years (see Box 1). As of 2018, 30 percent of borrowers with a direct loan with the Federal Government were enrolled in some form of income-driven repayment (IDR) program (accounting for 48 percent of student loan debt), compared to just 10 percent of borrowers in 2013 (accounting for 20 percent of student loan debt) (U.S. Department of Education, 2019).

A major complication in policymakers' ability to propose promising solutions is the lack of data on how families—not just individual borrowers—are shouldering the burden of student loan repayment, and the impact of student loan debt on other financial outcomes. The central challenge is that student loan payments and debt information are difficult to observe in conjunction with other financial outcomes, such as income, spending, and other debt payments, and certainly not on a high-frequency basis for large samples.[1]

With this report, the JPMorgan Chase Institute aims to describe how student

loan payments fit into the context of families' larger financial lives. We offer the debate insight into a new high-frequency cash flow perspective on student loan payments and how they relate to a family's income, liquid assets, spending, and other debt payments (see the Data Asset section for a full description of the samples and a comparison of JPMorgan Chase Institute data with existing available datasets). This perspective, based on student loan payment transactions observed out of a universe of 39 million Chase checking accounts between October 2012 and July 2018, is novel not just for its large sample size, but also its visibility into private and federal student loan payments (including any fees and fines), alongside income, spending, liquid assets and other debt payments.

Finally, this data asset is distinct in terms of its family perspective on financial lives. Whereas existing research typically assesses student loan repayment at the borrower level, our lens, based on the primary account holder of a checking account, allows us to take into consideration the potential for a family to be making payments on multiple student loans and on behalf of other borrowers. This is an important, but often overlooked or hidden piece of the student loan repayment picture, given that roughly 19 percent of individuals report receiving help from others to pay off their student loans, and roughly 9 percent of borrowers owe money for a spouse's, partner's, child's or grandchild's education (Larrimore et al., 2017).

With this new data asset, we aim to answer five key questions:

1. **What share of take-home income are families spending on student loan payments?** We quantify this as the median share of observed take-home income that is spent on student loan payments. Take-home income reflects a cash flow perspective of a family's ability to make a payment in any given month. Because there could be many reasons for families to pause payments for a period of time (see Box 1), we also report and emphasize the conditional median payment size and burden, defined as the median share of take-home income spent on student loan payments in months in which positive student loan payments are observed (i.e. $0-payment months are excluded from the conditional payment size and burden measures).

2. **How does the financial burden of student loan payments differ across demographic groups?** We examine differences by age, family income, and the gender of the primary account holder.

3. **How consistent are student loan payments, and how volatile are payment amounts?** We examine families actively making student loan payments and define consistency as the proportion of months with positive (non-$0) payments. A family is considered to be making consistent payments if it does so in more than 90 percent of months. We assess volatility in monthly payment amount by measuring the coefficient of variation of positive monthly payments for a given family.[2]

4. **In what ways do student loan payments differ from other types of loan payments, notably auto loan and mortgage payments?** We compare the consistency and volatility of student loan payments to auto loan and mortgage payments among families who are making both student loan payments and either auto loan or mortgage payments.

5. **How do student loan payments fluctuate with income, liquid assets, and expenditures?** We examine the extent to which student loan payments are associated with fluctuations in income, liquid assets, and expenditures when families start and stop making student loan payments.

Our findings are as follows:

Finding 1: The typical family's median student loan payment is $179 per month or 5.5 percent of take-home income in months with positive payments. One in four families spend more than 11 percent of their take-home income on student loans.

Finding 2: Younger and low-income families are most burdened by student loan payments, but there is no material difference in burden by male versus female account holders.

Finding 3: While overall 54 percent of families make consistent student loan payments, low-income families are less likely to make consistent loan payments (44 percent) compared to high-income families (63 percent).

Finding 4: Among families actively paying multiple loans, the proportion making consistent payments is lower for student loans than auto loans (10 percentage point difference) and mortgages (6 percentage point difference).

Finding 5: Income, liquid assets, and expenditures increase sharply prior to starting student loan payments and decrease after stopping student loan payments.

Our insights from this new, high-frequency lens into student loan repayment behavior have important implications for policymakers, financial institutions, institutions of higher education, and employers. There are important segments of the population who are still significantly burdened by student loan payments, especially younger and lower-income account holders, and student loan payments are sensitive to large income changes. Insofar as student loan payments are less consistent and more volatile than auto loan and mortgage payments, families may be benefiting from the greater leniency that exists with student loan repayment compared to other loan types. Still, there may be better ways to structure or implement student loan repayment plans that would ensure that families are not over-burdened by student loan payments. Revisiting underwriting and federal student aid criteria and considerations might help address the root of the student loan repayment problem. More broadly, colleges and universities, employers, and financial institutions have a role to play in helping borrowers manage their student loan debt.

Box 1: Background on Student Loan Repayment Plans

How are student loan repayment plans structured?

A student loan is originated when a student begins matriculating at a degree program. Regardless of the repayment plan, a borrower is not expected to start repaying until after a 6-month "grace period" after she graduates or stops matriculating. She is defaulted into a standard repayment plan, which stipulates fixed monthly payments for up to 10 years (Table 1.1). As of Q4 of 2018, 45 percent of borrowers in the federal loan portfolio were in this standard repayment plan (Federal Student Aid, 2019). A borrower may opt into a different plan structure to extend the life of the loan (e.g. extended repayment) or adjust the payment level to her income level through a graduated repayment plan or income-driven repayment (IDR) plan (Table 1.1).[3]

There are several different types of IDR plans, but the key features of these plans are that a borrower certifies her adjusted gross income (AGI), and her student loan payment is set not to exceed 10 to 20 percent of her discretionary income, which is defined as the difference between her AGI and 150 percent of the federal poverty level.[4] Borrowers in an IDR plan must recertify their AGI at least on a yearly basis and may do so more frequently. If they fail to recertify, their payment returns to the payment stipulated by the standard repayment plan. Under most IDR programs, any remaining loan balance is forgiven after 20 to 25 years of qualifying IDR payments.

Table 1.1: Types of student loan repayment plans

Type (share of borrowers in 2018 Q4)*	Examples	Term	Monthly payment	Share of borrowers (2018 Q4)*
Level Repayment (52%)	• Standard Repayment (default option) • Extended	Up to 10 years Up to 25 years	Fixed monthly payment, at least $50 per month	45% 7%
Graduated Repayment (14%)	• Graduated • Extended	Up to 10 years Up to 25 years	Graduated payments that increase over time (e.g. every 2 years)	13% 1%
Income-Driven Repayment (31%)	• Income- Contingent • Income-Based • Pay As You Earn • Revised Pay As You Earn (RePAYE)	Up to 25 years Up to 25 years Up to 20 years Up to 20-25 years	Monthly payments capped at 10-20% of discretionary income with loan balance forgiven after 20-25 years of qualifying payments.**	3% 14% 5% 9%
Alternative / Other (4%)	• A repayment plan customized to the borrower's circumstances that meet basic repayment plan requirements.			4%

* Share of borrowers are based on portfolio of Federal Student Loan Source: Federal Student Aid.

** Discretionary income is typically defined as the family's adjusted gross income minus 150% of the federal poverty threshold. Families must recertify their adjusted gross income at least every 12 months. Payments can be as low as $0 per month.

Source: Federal Student Aid Data Center

Why might families not make a student loan payment?

Given the unique terms of student loan contracts and the emergence of IDR plans, there are any number of reasons why a borrower might not make a student loan payment in a given month. These fall into six broad categories, which unless otherwise noted, we have quantified based on National Student Loan Data System data on federal student loans (Table 1.2) (U.S. Department of Education, 2019):

They are still in school or recently graduated: Roughly 22 percent of Federal Loan borrowers are either currently still in school (18 percent) or graduated within the last six months and are thus in the grace period (4 percent). We would likely not observe these borrowers in our sample, as they might not have ever made a student loan payment yet. Our sample reflects families who have made at least one payment.
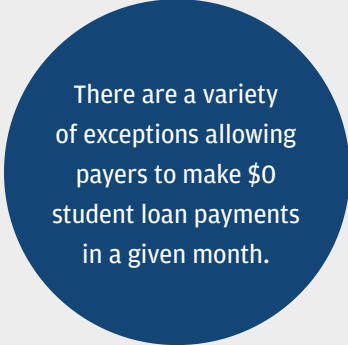
They are in deferment: Student loan borrowers are permitted to defer their student loan payments when they return to school to complete a degree, engage in military service, or experience certain kinds of financial hardship, such as unemployment. Roughly 12 percent of borrowers in the repayment phase of their loan are in deferment.

They are in forbearance: Forbearance is offered by servicers for a range of reasons, including economic hardship and military service, whereby the servicer allows the borrower to cease payments for a period of time. Interest continues to accrue and can result in an increasing loan balance. Roughly 8 percent of borrowers are in forbearance.

They are delinquent or in default: In 2018, 22 percent of borrowers were in default, and an additional 11 percent in repayment status were at least 30 days delinquent. Thus a total of 33 percent of borrowers in the repayment phase of their loan are either delinquent or in default. When a borrower fails to pay, they are frequently contacted by their servicer; charged late fees when they are 10-90 days delinquent; reported to the credit bureaus at 91, 181, and 271 days late; and considered to have defaulted at 270 days. Once a loan has defaulted, the full balance is owed and cannot be written off through bankruptcy. In addition, the borrower becomes ineligible for federal student aid and loan forbearance or deferment in the future, and the Federal government can garnish wages, tax refunds, and federal benefits.

They are on an income-driven repayment (IDR) plan and owe $0 payments: Currently, 58 percent of borrowers are in repayment status (ignoring borrowers who are still in school or in the six-month post-graduation grace period). Yet even among these borrowers, some may be making $0 payments because they have enrolled in an IDR program and certified that their income is sufficiently low to warrant a $0 payment. Among the 58 percent of borrowers in repayment status, roughly 32 percent are current on their loan and in an IDR program, and a recent report from one of the major student loan servicers indicated that 38 percent of borrowers in an IDR qualified for a $0 payment (Navient Solutions Inc., 2015). Thus, roughly 12 percent of borrowers who are current in repayment status and current on their loans, and 5 percent of borrowers overall could be making a "payment" of $0.

They made an advance payment: Among borrowers in repayment status, servicers may waive subsequent months' payments when borrowers make a payment totaling two times or more of their scheduled amount.[5] In other words, pre-payments can change payment schedules, putting borrowers into "paid ahead status" rather than applying to faster principal pay-down, unless the borrower specifies otherwise.

> There are a variety of exceptions allowing payers to make $0 student loan payments in a given month.

In aggregate, among borrowers who are not still in school or in the grace period and have likely started to make student loan payments, we might expect to see as many as 59 percent making no payment in a given month, including 26 percent who have "permission" to make no payment because they are in deferment or forbearance or qualify for a $0 payment under an IDR plan. The remaining 33 percent could be making no payment because they are delinquent or in default. The potentially high prevalence of non-payments is particularly relevant in light of the fact that we observe a cash flow perspective of student loan payments regardless of the balance sheet status of the loan for the family.

Table 1.2: Among borrowers who have started making student loan payments, as many as 59 percent might be making no payment at any given time

Federally managed portfolio as of 2018 Q4

		All federal loan borrowers	Federal loan borrowers excluding those who have not yet started repaying loans
Likely not yet repaying loans	In-School	18%	
	Grace	4%	
Likely started repaying loans (observable in JPMC Institute sample)	Deferment	9%	12%
	Forbearance	6%	8%
	Cumulative in default (270+ days delinquent)	17%	22%
	Repayment	45%	58%
	Delinquent	*9%*	*11%*
	*Current but IDR with $0 payment**	*4%*	*6%*
	Current	*32%*	*41%*
Total		100%	100%
Possibly making no payment		67%	59%

* Assumes that of the 32% of current borrowers who are in an IDR plan, 38% qualify for $0 payment qualify for a $0 payment (Navient Solutions Inc., 2015)

Source: Federal Student Aid Data Center

It is worth noting that there are several reasons why a family might choose to prioritize other debt payments over their student loan payment when faced with financial hardship. Student loan contracts contain weaker consequences for not paying and more readily offer forbearance compared to auto loan and mortgage payments. Interest rates on student loans may be lower than on auto loans and mortgages (particularly in the case of federally subsidized loans on undergraduate degrees and for less credit-worthy borrowers). Auto loan and mortgage payment contracts typically stipulate shorter timeframes before a borrower is first reported to credit bureaus for delinquency or considered in default (30 and 90 days, respectively for auto loans and mortgages, compared to 90 and 270 days for student loans). Finally, the costs of default (e.g. bankruptcy and/or vehicle or home repossession) may also be perceived as higher for auto loans and mortgages than student loans (e.g. wage, tax refund, and federal benefit garnishments and future ineligibility for student aid or student loan forbearance or deferment).

Finally, on top of the reasons why a borrower may not make a student loan payment, we may also observe account holders not making a student loan payment because they may not personally owe a payment on the loan to begin with. As mentioned above, in our dataset we cannot distinguish between student loan borrowers and payers. That said, we may observe an account holder making a payment on behalf of another borrower, even outside the context of "Parent-PLUS" loans whereby a parent cosigns a loan for their child. Months with no payments may simply reflect months in which the account holder is not generously making a student loan payment on another borrower's behalf.

Finding
One

The typical family's median student loan payment is $179 per month or 5.5 percent of take-home income in months with positive payments. One in four families spend more than 11 percent of their take-home income on student loans.

Figure 1.1 illustrates the distribution of median student loan payment amount and payment burden as a fraction of take-home income among families in the Rolling Window Sample (see Data Asset section for exact details on the sample construction). In this sample, we analyze account holders who have made at least one student loan payment within a six month period, measuring across all months and also limiting to months with positive payments. Based on this sample, we observe roughly 13.5 percent of families making student loan payments in 2016, on par with the student loan payment incidence observed in the Survey of Consumer Finances (13.4 percent).[6]
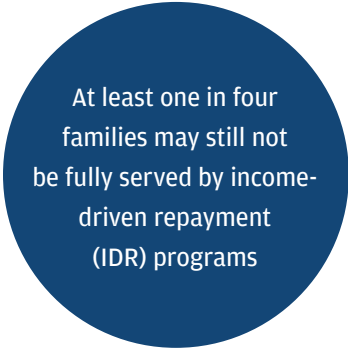
Figure 1.1: In a typical month with a positive payment, families make student loan payments of $179 and 5.5 percent of take-home income
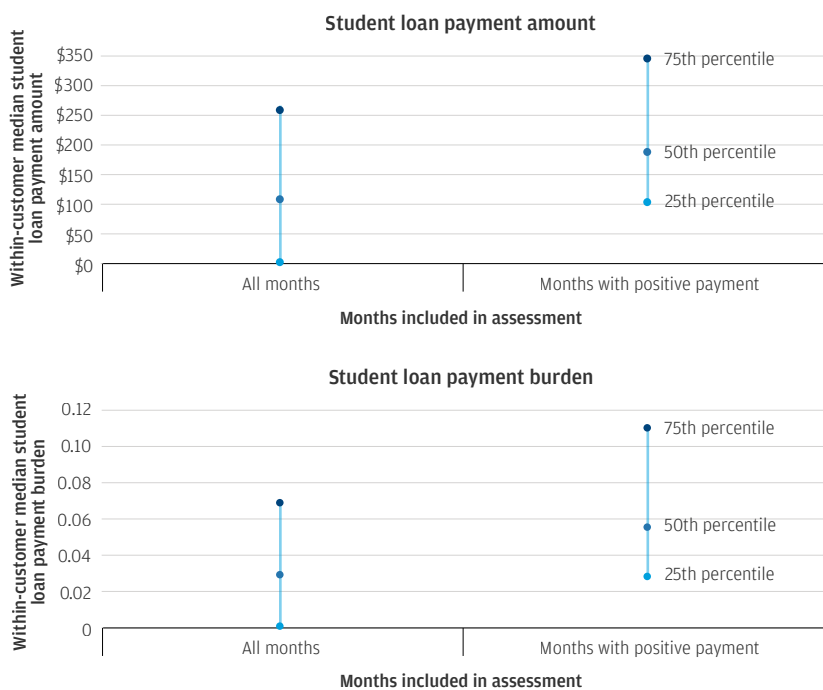
Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018.

Source: JPMorgan Chase Institute

The typical family making student loan payments spends $179 per month or roughly 5.5 percent of take-home income in months with a positive payment (Figure 1.1).[7] Across all months, the typical payment size is $105, representing 2.9 percent of take-home income.[8] These aggregate statistics belie large variation in payment sizes and burdens across families and demographic groups. As shown in Figure 1.1, in months with positive payments, one in four families makes a student loan payment of greater than $329 or more than 11 percent of their take-home income.

At least one in four families may still not be fully served by income-driven repayment (IDR) programs

To put these numbers into perspective, we compare 2016 Survey of Consumer Finances (SCF) data with our Rolling Window Sample for 2016. The median payments we observe in our sample are slightly lower in aggregate ($144 on an unconditional basis and $203 in months with positive payments) than what families report in the 2016 SCF ($200), but this comparison varies by age (see Figure 6.2 in the Data Asset section). On the other hand, we estimate significantly higher median conditional payment burden (6.4 percent) than the SCF (3.2 percent), in part due to the fact that we reflect payment burden as a fraction of take-home income, while the SCF captures gross family income as the denominator.

Prior JPMorgan Chase Institute work provides additional context on these numbers. We observe that families making student loan payments spend a higher share of their take-home income on student loans (2.9 percent) than on out-of-pocket health-care expenses (1.7 percent) over the course of 2017 (Farrell and Greig, 2017). And in months with a positive student loan payment, families spend more on student loans ($179) than on fuel ($148) (Farrell and Greig, 2018). Thus, families are spending more on student loans than key categories of basic necessities.

How do these burden levels compare to existing measures of affordability stipulated by income-driven repayment programs (see Box 1)? We know that one in four families spends at least 11 percent of take-home income on student loans in months with positive payments (and 6.9 percent on an unconditional basis). For a couple with $40,000 in take-home income, spending 11 percent of take-home income on student loans implies monthly payments of $367 (or $230 per month using the 6.9 percent unconditional burden). On the other hand, we estimate that under an income-driven repayment plan requiring monthly payments of 10 percent of discretionary income, a couple with $40,000 in take-home income would pay only $266 per month, significantly less than the $367 per month we observe a quarter of such families paying.[9]
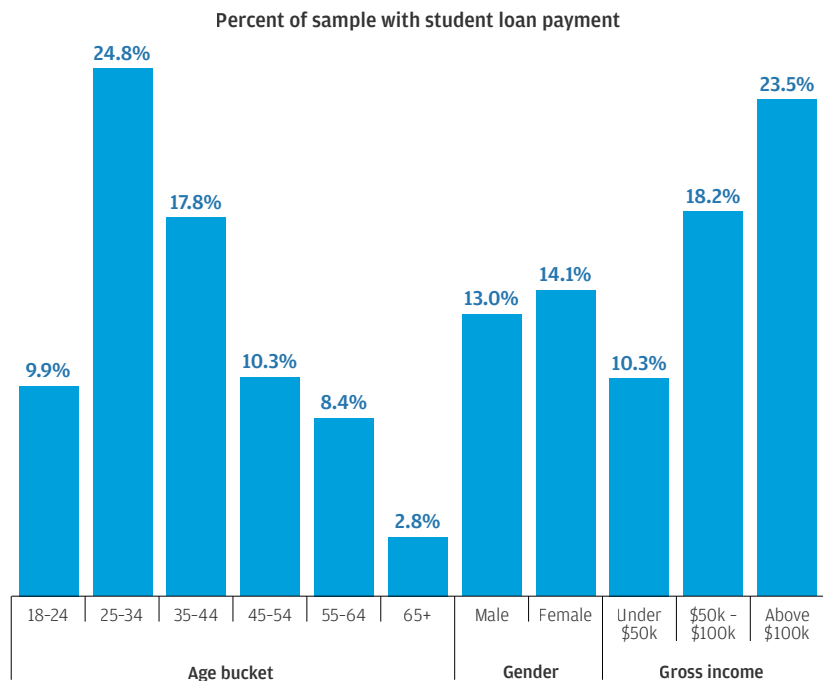
Put differently, the levels of financial burden we estimate based on observed student loan payments suggest that a considerable portion of the population making student loan payments—at least one in four families—may still not be fully served by income-driven repayment (IDR) programs. This observation is consistent with evidence of low enrollment among young and low-income borrowers (Cox, 2017) and high attrition rates out of IDR programs (Herbst, 2019). Although many families in our sample—potentially 30 percent[10]—may already be on IDR plans and making lower payments as a result, on a cash flow basis, many families are still spending a higher share of their take-home income than is stipulated by such plans.

Finding
Two
—

Younger and low-income families are most burdened by student loan payments, but there is no material difference in burden by male versus female account holders.

Student loan payments vary considerably by age, income, and gender. In our sample, families between the ages of 25 and 34 are most likely to be making student loan payments, with one in four families making student loan payments, compared to an overall incidence of 13.5 percent (Figure 2.1). In fact, 57 percent of all families making student loan payments have a primary account holder under the age of 45 years (Table 6.2).

Figure 2.1: One in four account holders aged 25-34 years is making student loan payments

Percent of sample with student loan payment

Age bucket						Gender		Gross income		
18-24	25-34	35-44	45-54	55-64	65+	Male	Female	Under $50k	$50k – $100k	Above $100k
9.9%	24.8%	17.8%	10.3%	8.4%	2.8%	13.0%	14.1%	10.3%	18.2%	23.5%

Base sample is all JPMCI customers who meet the transaction screen in all months of 2016. Student loan payers are from the Rolling Window Sample of accounts in 2016.
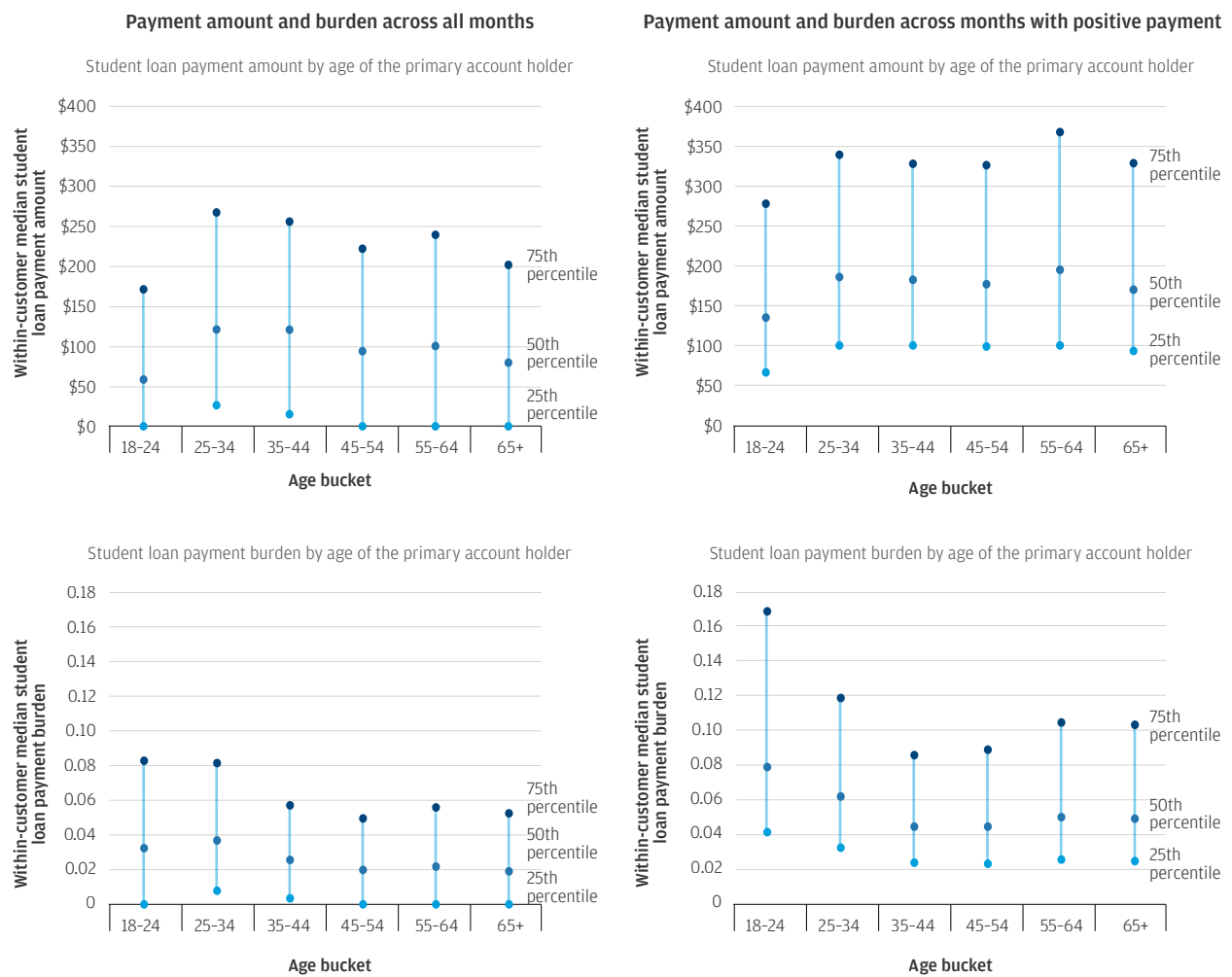
Source: JPMorgan Chase Institute

Figure 2.2 illustrates the distribution of within-customer median student loan payment amount and payment burden as a fraction of take-home income by age of the primary account holder. Account holders aged 25-34 make the largest student loan payments—the median student loan payment for the typical family is $121 across all months and $186 in months with positive payments. A quarter of account holders in this age range make a payment of $266 or more and $340 in months with positive payments.

Notably, account holders under 35 years old are particularly burdened by student loan payments. One in four 25 to 34 year olds spend 11.8 percent or more of their take-home income on student loans in months in which they make a student loan payment. A quarter of account holders under 25 spend 16.8 percent or more of their take-home income on student loans.

Figure 2.2: One in four account holders aged 25-34 years spent 11.8 percent or more of their take-home income on student loans

Payment amount and burden across all months

Student loan payment amount by age of the primary account holder

Student loan payment burden by age of the primary account holder

Payment amount and burden across months with positive payment

Student loan payment amount by age of the primary account holder

Student loan payment burden by age of the primary account holder

Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018.
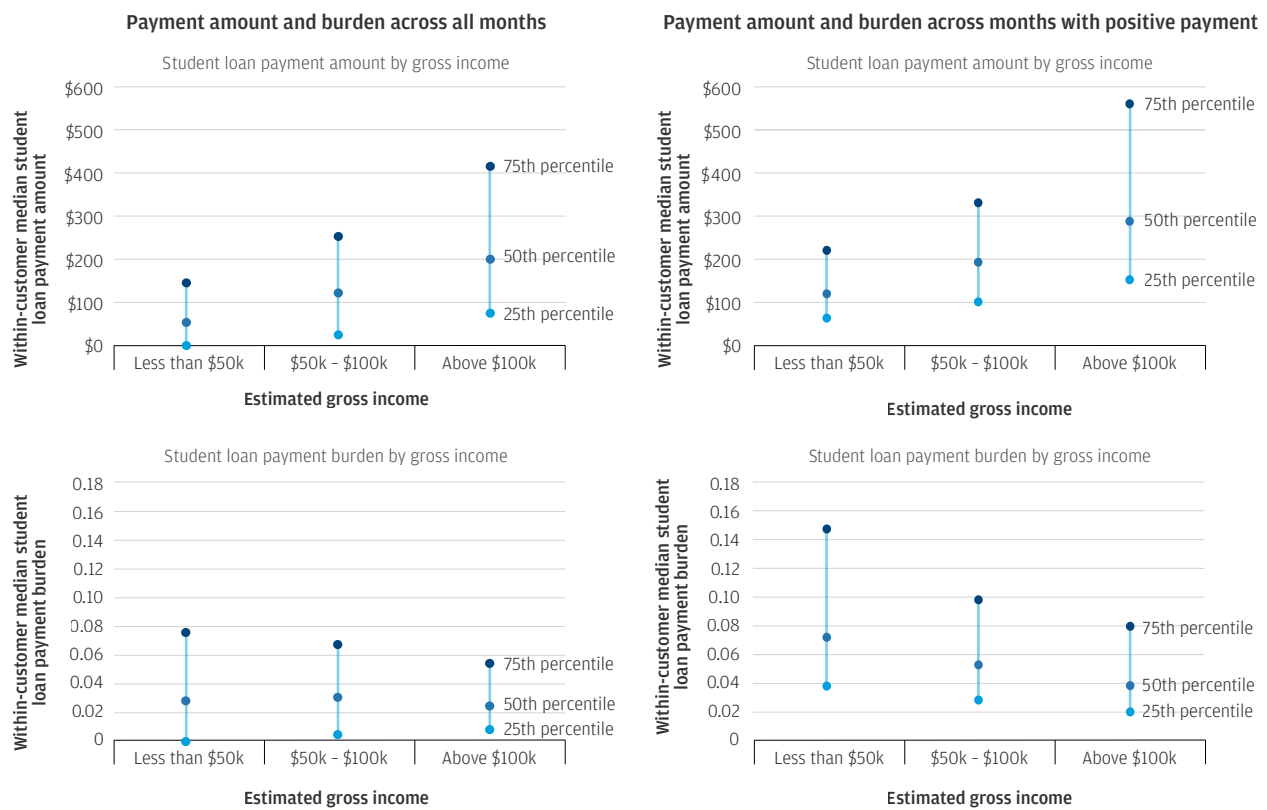
Source: JPMorgan Chase Institute

In Figure 2.3, we segment the population based on estimated gross income.[11] As we might expect, we observe that families with higher income levels make larger student loan payments. They are less burdened by these payments, however. Although the burden of student loan payments as a fraction of take-home income is roughly 2.9 percent across the income spectrum when we examine all months, if we focus on the months in which families make a positive payment, we observe that among families earning less than $50,000 (30 percent of the sample) student loan payments represent roughly 7 percent of take-home income, compared to 5 percent or less for families earning more than $50,000. Among families with gross income of $50,000 or less, one in four families spends 14.7 percent or more of their take-home income on student loans. The burden of student loan payments, when examined on an unconditional basis, is similar across the income spectrum but higher for low-income families when examined on a conditional basis, which suggests that low-income families have more months in which they make no payment at all. We explore whether this is the case in the next section by examining the consistency of student loan payments by income.

Figure 2.3: Lower-income families are significantly more burdened by student loan payments

Payment amount and burden across all months

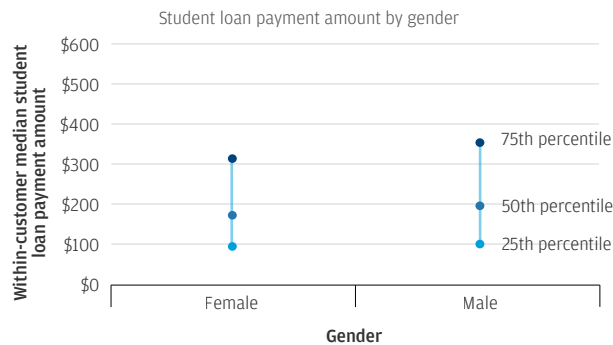Payment amount and burden across months with positive payment

Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018. Gross income estimated via the JPMC Institute Income Estimate (IIE) version 1.0.

Source: JPMorgan Chase Institute

Figure 2.4: Within an income group, male and female account holders spend similar amounts and are similarly burdened by student loan payments

Payment amount and burden across months with positive payment

Student loan payment amount by gender

Payment amount and burden across months with positive payment

Student loan payment amount by gross income and gender

Student loan payment burden by gender

Student loan payment burden by gross income and gender

Rolling Window Sample of accounts with at least one student loan payment within six months, March 2013 through July 2018. Gross income estimated via the JPMC Institute Income Estimate (IIE) version 1.0.
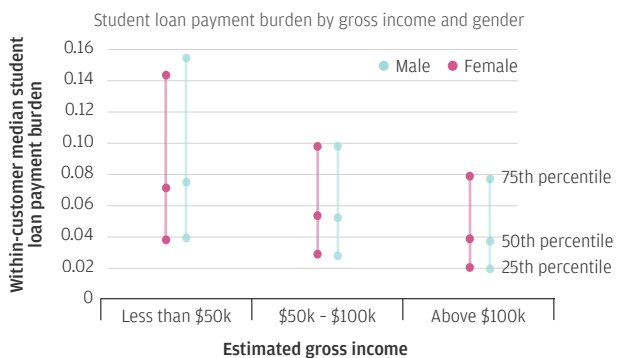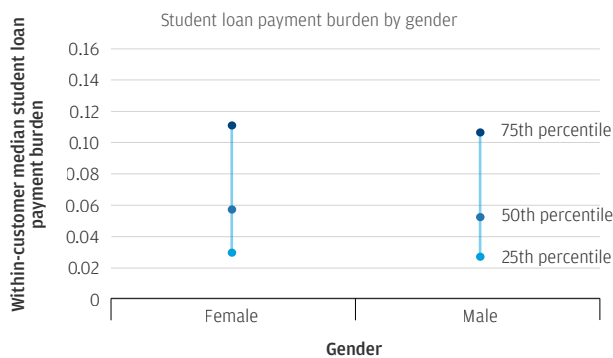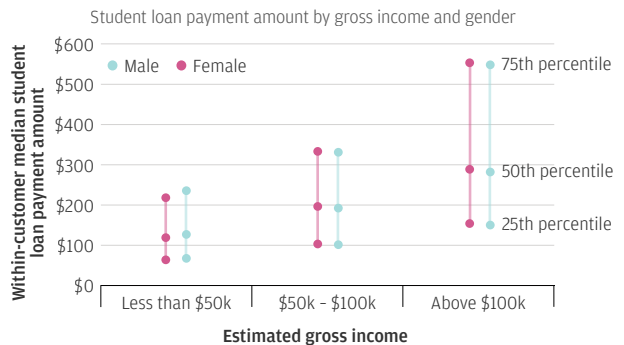
Source: JPMorgan Chase Institute

In light of the fact that almost two-thirds of student loan debt is held by women (AAUW, 2017), we also sought to understand student loan payment levels and burden by gender.[12] While we typically refer to our unit of analysis as a family, when examining our results by gender, we refer to the gender of the primary account holder of the family unit. Male account holders make slightly larger student loan payments than female account holders on aggregate (conditional median payments of $172 and $196 respectively), but this relationship does not hold for burden (Figure 2.4). In addition, we observe no relationship between gender and either payment amount or burden when segmenting by gross income: for a given income range, male and female account holders spend roughly the same amount and same fraction of their take-home income on student loans.[13]

In summary, there are important segments of the population that are still significantly burdened by student loan payments, especially younger and lower-income account holders, a quarter of whom are spending upwards of 15 percent of their take-home income on student loan payments.

Finding
Three

While overall 54 percent of families make consistent student loan payments, low-income families are less likely to make consistent loan payments (44 percent) compared to high-income families (63 percent).

Student loan payment sizes and burdens vary not only across families but also within families over time. In this analysis we examine the degree to which families consistently make positive payments and the volatility of payment amounts in months with positive payments. We focus on a Payment History Sample of families for whom we observe at least two student loan payments (see Data Asset section for a complete sample description). We assess the consistency of payments and payment amounts between the first and last observed payments—an average time frame of 31 months.

We first examine the consistency with which families make student loan payments, defined as the proportion of months with positive (non-$0) payments. We consider a family to be making consistent payments if it does

so in more than 90 percent of months. Figure 3.1 shows that 54 percent of families in our sample make consistent student loan payments. Twenty percent of families make payments in two-thirds of months or less.

Figure 3.1: Half of families make consistent student loan payments
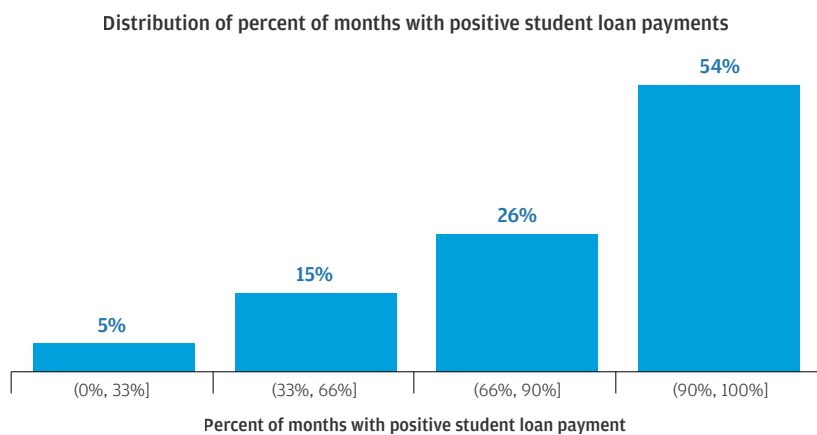
Distribution of percent of months with positive student loan payments

Percent of months with positive student loan payment

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment.

Source: JPMorgan Chase Institute

Figure 3.2 shows that families with higher incomes are more likely to make consistent student loan payments: while only 44 percent of families with income below $50,000 make consistent student loan payments, 52 percent of families earning between $50,000 and $100,000, and 63 percent of families earning above $100,000 do so.

These results highlight a key facet of student loan payment behavior: rather than binary repayment states—actively paying on a monthly basis or consistently not making payments month after month—families tend to alternate frequently between positive payment months and $0-payment months. While student loan repayment contracts—even income-driven repayment plans—specify monthly payments within a given 12-month timeframe, many factors could result in months with no payment (see Box 1), potentially reflecting a temporary financial hardship or more perpetual difficulty making payments. The fact that more high-income families make consistent student loan payments than low-income families raises the question as to whether a given family is more likely to make a student loan payment during periods of increased income or other assets. We assess this in Finding 5 by examining how student loan payments fluctuate with income.

Figure 3.3 shows the fraction of families making consistent student loan payments by age of primary account holder. While families with primary account holders aged 25 through 44 are more likely to make payments consistently than other families, there is no clear pattern between age and payment consistency.[14]

It is possible that the causes of payment inconsistency could differ substantially by age, however. For example, among younger families payment inconsistency cou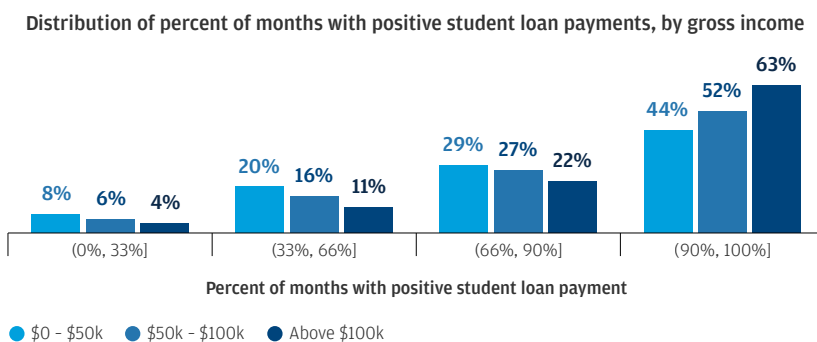ld reflect the effects of greater income instability among younger borrowers, as they transition in and out of school and jobs. Payment instability among older borrowers could reflect a higher share of payers making one-off payments towards another borrower's loan.

We next turn to examining volatility in payment amounts, measured as the coefficient of variation in positive monthly payments within a family.[15] A number of factors, including the presence of late fees, the income recertification process, prepayment, or payment on behalf of another borrower, could result in variation in payment amounts across months with positive payments.[16] The median coefficient of variation on monthly student loan payments is 0.35. To characterize this volatility in a different way, for a family with a coefficient of variation of 0.35 in our data, roughly 31 percent of monthly student loan payments are more than 25 percent above or below the family's median student loan payment.

In contrast to the above results for payment consistency, we observe no difference in payment volatility across income groups—the coefficient of variation of positive student loan payments is between 0.35 and 0.37 across the income spectrum. Similarly, there is no systematic relationship between payment volatility and age.[17]

Figure 3.2: Higher-income families are more likely to make consistent student loan payments

Distribution of percent of months with positive student loan payments, by gross income

Percent of months with positive student loan payment

● $0 - $50k   ● $50k - $100k   ● Above $100k

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment. Gross income estimated via JPMC Institute Income Estimate (IIE) version 1.0.

Source: JPMorgan Chase Institute

Figure 3.3: There is no systematic relationship between primary account holder age and student loan payment consistency
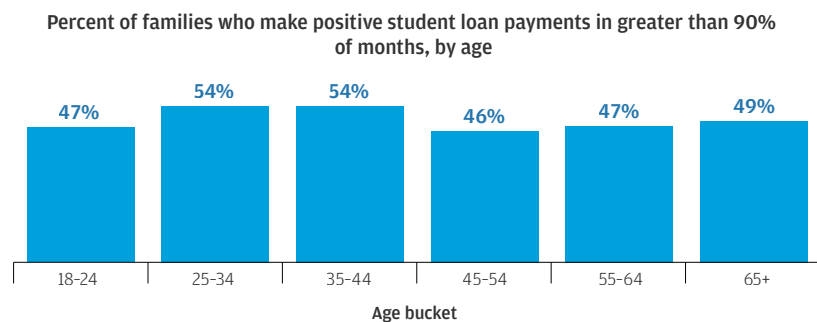
Percent of families who make positive student loan payments in greater than 90% of months, by age

Age bucket

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment.

Source: JPMorgan Chase Institute

Finding
Four

Among families actively paying multiple loans, the proportion making consistent payments is lower for student loans than auto loans (10 percentage point difference) and mortgages (6 percentage point difference).

Having assessed the consistency and volatility of student loan payments, we next put these numbers into context by comparing patterns of student loan payments with those of auto loan and mortgage payments, two other install-ment loan types that typically spec-ify steady, fixed monthly payments. Since the population of student loan payers who also make auto loan or mortgage payments is considerably older and higher-income than families

only making student loan payments (see Table 4.1), we compare payment consistency and volatility among fam-ilies who are making both student loan and auto loan payments (37 per-cent of families), or both student loan and mortgage payments (27 percent of families). We define those joint-loan payers by limiting the Payment History Sample to timeframes in which we observe evidence of active auto loan or mortgage loan payments.[18]

Families making both types of loan payments, either both student loan and auto loan payments or both stu-dent loan and mortgage payments, tend to be older, have higher incomes, and make larger student loan pay-ments than families only making student loan payments. As such, they might be more likely to make con-sistent student loan payments to begin with, relative to families mak-ing only student loan payments.

Table 4.1: Families who make student loan payments in addition to either auto loan or mortgage payments tend to be older, higher-income, and making larger student loan payments

	Percent of overall sample	Mean age	Median age	Mean gross income	Median gross income	Conditional mean student loan payment	Conditional median student loan payment
Student loan-only payers	50%	35	31	$60,249	$51,684	$381	$189
Student loan and auto loan payers	37%	39	36	$89,761	$78,429	$392	$222
Student loan and mortgage payers	27%	42	39	$103,944	$93,207	$440	$246
All student loan payers	100%	37	34	$76,557	$65,660	$394	$207

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment. Table rows represent sub-samples (not mutually exclusive) based on presence of other loan payments.
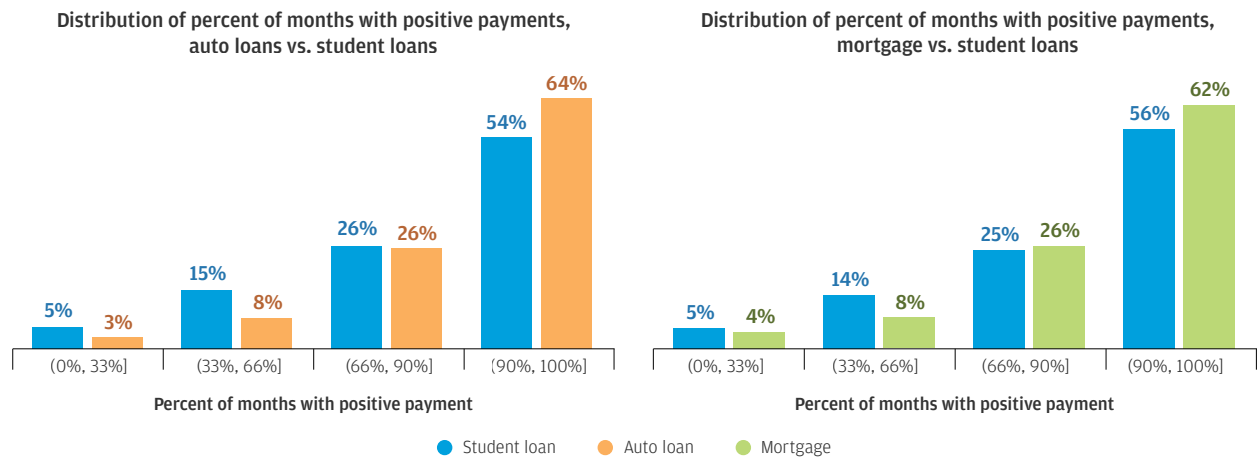
Source: JPMorgan Chase Institute

We find that fewer families make consistent payments on student loans than on auto loan or mortgage payments (Figure 4.1). While 54 to 56 percent of families make consistent student loan payments, more than 60 percent make consistent auto loan or mortgage payments. This view specifically informs the behaviors of families with multiple debt payments, which may influence payment patterns and consistency levels. However, when assessing the sub-sample of families whose only active debt payments are for student loans, payment consistency is steady (at 53 percent). This confirms that the lower consistency numbers for student loan payments are not simply a result of juggling multiple debt payments, but accurately reflect overall repayment patterns of student loans.
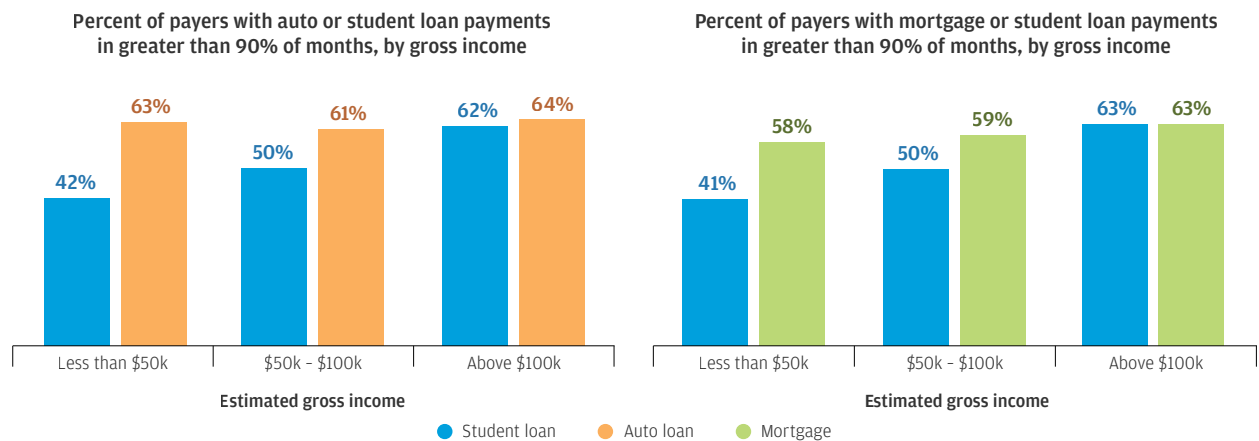
Figure 4.1: Fewer families make consistent student loan payments than auto loan and mortgage payments

Distribution of percent of months with positive payments, auto loans vs. student loans

Distribution of percent of months with positive payments, mortgage vs. student loans

Percent of months with positive payment

● Student loan ● Auto loan ● Mortgage

Sample of accounts with at least two student loan payments and at least two other debt payments (auto loan on the left, mortgage on the right). Accounts are included for all months between first and last observed loan payment within October 2012 through July 2018.

Source: JPMorgan Chase Institute

Figure 4.2: Lower-income families are less consistent on student loan payments than auto loan and mortgage payments

Percent of payers with auto or student loan payments in greater than 90% of months, by gross income

Percent of payers with mortgage or student loan payments in greater than 90% of months, by gross income

Estimated gross income

● Student loan ● Auto loan ● Mortgage

Sample of accounts with at least two student loan payments and at least two other debt payments (auto loan on the left, mortgage on the right). Accounts are included for all months between first and last observed loan payment within October 2012 through July 2018. Gross income estimated via the JPMC Institute Income Estimate (IIE) version 1.0.

Source: JPMorgan Chase Institute

Segmenting by estimated gross income, we compare consistency of loan payments among families with multiple loan payments. In Finding 3, we showed that lower-income families are less likely to make consistent student loan payments than higher-income families. Figure 4.2 shows little evidence of a relationship between income and consistency of either auto loan or mortgage payments; only student loans exhibit this correlation.

Next, we compare the volatility of loan payment amounts across student loans, auto loans, and mortgages. Table 4.2 shows the coefficient of variation separately by which types of loan(s) a family is actively repaying. Volatility in payment magnitude is higher for student loan payments than for auto loan and mortgage payments. Among families who make both student loan and auto loan payments, the median within-family coefficient of variation is 0.36 for student loan payments compared to 0.23 for auto loan payments. Similarly, for families who make both student loan and mortgage payments, the median within-family coefficient of variation is 0.36 for student loan payments compared to 0.17 for mortgage payments.

Table 4.3 compares volatility in monthly payment amounts across loan types and by income levels. As mentioned in Finding 3, in aggregate, families' student loan payments are similarly volatile across the income spectrum. This result appears to hold among all three subsets of student loan payers that we study (those with only student loans, those with student loans and auto loans, and those with student loans and mortgages). Table 4.3 also suggests higher payment volatility of auto loan and mortgage payment amounts among higher-income families, again possibly indicating a higher incidence of prepayment.

The results in this finding raise questions regarding why payments on student loans are less consistent and more volatile than on other types of monthly installment loans. As described in Box 1, there could be a number of possibilities. Given the weaker consequences for not making a student loan payment, families may prioritize other types of loan payments when faced with a financial hardship, which would result in lower payment consistency. Higher payment volatility may also be driven by IDR

Table 4.2: There is more volatility in monthly payment amounts in student loan payments compared to auto loan or mortgage payments

Coefficient of variation of monthly payments in months with positive payments

Sample	Families with student loans only	Families with student loans and auto loans		Families with student loans and mortgages	
	Student loans	Student loans	Auto loans	Student loans	Mortgages
Mean coefficient of variation	0.47	0.53	0.29	0.56	0.22
Median coefficient of variation	0.34	0.36	0.23	0.36	0.17

Sample of accounts with at least two student loan payments and: no auto loan or mortgage payments (left column); at least two auto loan payments (center column); at least two mortgage payments (right column). Accounts are included for all months between first and last observed loan payment within October 2012 through July 2018.

Source: JPMorgan Chase Institute

Table 4.3: Volatility in monthly student loan payment amount does not vary systematically by family income; however, high-income families have more volatile auto loan and mortgage payment amounts than low-income families

Median coefficient of variation of student loan, auto loan, and mortgage payments by Gross Income Estimate in months with positive payments

Gross income	Families with student loans only	Families with student loans and auto loans		Families with student loans and mortgages	
	Student loans	Student loans	Auto loans	Student loans	Mortgages
Less than $50,000	0.36	0.37	0.18	0.36	0.12
Between $50,000 and $100,000	0.36	0.37	0.24	0.37	0.18
Above $100,000	0.35	0.37	0.28	0.37	0.19

Sample of accounts with at least two student loan payments and: no auto loan or mortgage payments (left column); at least two auto loan payments (center column); at least two mortgage payments (right column). Accounts are included for all months between first and last observed loan payment within October 2012 through July 2018. Gross income estimated via the JPMC Institute Income Estimate (IIE) version 1.0.

Source: JPMorgan Chase Institute

plans insofar as they allow the required minimum monthly payment on student loans to vary from one year to the next.

In addition, there are many reasons unrelated to financial hardship, such as deferment or prepayment, that may result in greater payment inconsistency or volatility on student loans than auto loans or mortgages.[19] A family might be making student

loan payments on behalf of another borrower. This could result in payments that are less consistent and more volatile for student loans than other loan types, if families are less likely to make an auto loan or mortgage payment on another borrower's behalf or if such payments were less consistent and more volatile than payments the family was making on their own auto loan or mortgage.

Finding
Five

Income, liquid assets, and expenditures increase sharply prior to starting student loan payments and decrease after stopping student loan payments.

We showed above that families make consistent payments on student loans less than on auto loans or mortgages, with more volatile payment amounts. Next, we examine the relationship between student loan payments and income. As we have previously documented in the context of job loss and the exhaustion of unemployment insurance benefits, we know that student loan payments are sensitive to income (see Box 2). To explore this further, we assess changes in families' financial outcomes—in terms of their income, liquid assets, and expenditures—when families start and stop making student loan payments.

Box 2: How much do student loan payments fluctuate in the face of income shocks?

In Findings 3 and 4 above we showed that low-income families make student loan payments less consistently than high-income families, and that families make student loan payments less consistently than auto loan or mortgage payments in terms of both frequency and amount of the payment. In previous research, we demonstrated that student loan payments are highly sensitive to income shocks in two different contexts: job loss and exhaustion of unemployment insurance (UI) benefits (Farrell et al., 2016) as well as hurricanes (Farrell and Greig, 2018).

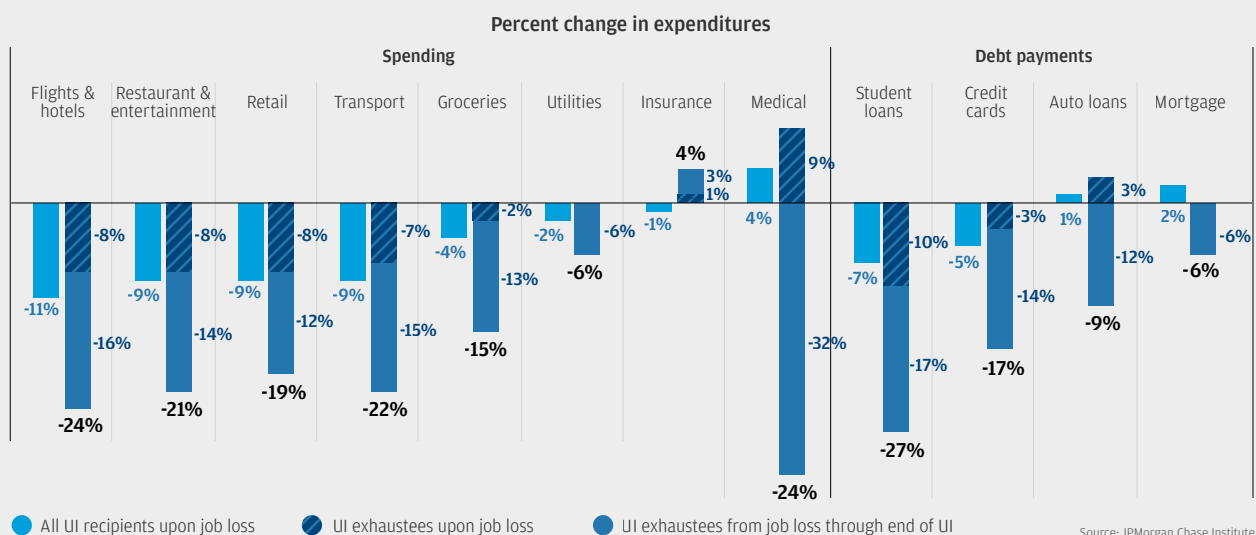In Farrell et al. (2016), we examined the path of income and spending among families who lost a job separately for those who were unemployed for less than six months versus those who were unemployed for more than six months and exhausted their UI benefits (roughly one in four UI recipients). Those who found a job within six months experienced less dramatic and shorter-lasting drops in income. Spending drops were also more dramatic for the long-term unemployed than for the short-term unemployed.

Figure 5.1 illustrates the aggregate drops in expenditures across spending and debt categories, from job loss and the onset of UI all the way to when UI benefits ran out. People initially cut their discretionary spending categories when they lost their job and

made more dramatic cuts when they exhausted their UI benefits: spending on flights and hotels, restaurants and entertainment, retail, and transport fell by 19 percent or more. However, people also cut essentials by the time UI benefits ran out: their spending on groceries fell by 15 percent, and even medical expenditures drop by 24 percent.

With the exception of student loans, UI recipients did not dramatically cut back on most types of debt payments upon job loss. Student loan payments fell by 7 percent upon job loss and 27 percent among the long-term unemployed once UI benefits expire, far greater than the modest cuts the long-term unemployed made to payments on their credit cards (17 percent), auto loans (9 percent), and mortgages (6 percent) when UI benefits ran out.

Figure 5.1: Job loss causes a drop in discretionary spending and student loan payments

Percent change in expenditures

Source: JPMorgan Chase Institute

● All UI recipients upon job loss   ◨ UI exhaustees upon job loss   ● UI exhaustees from job loss through end of UI
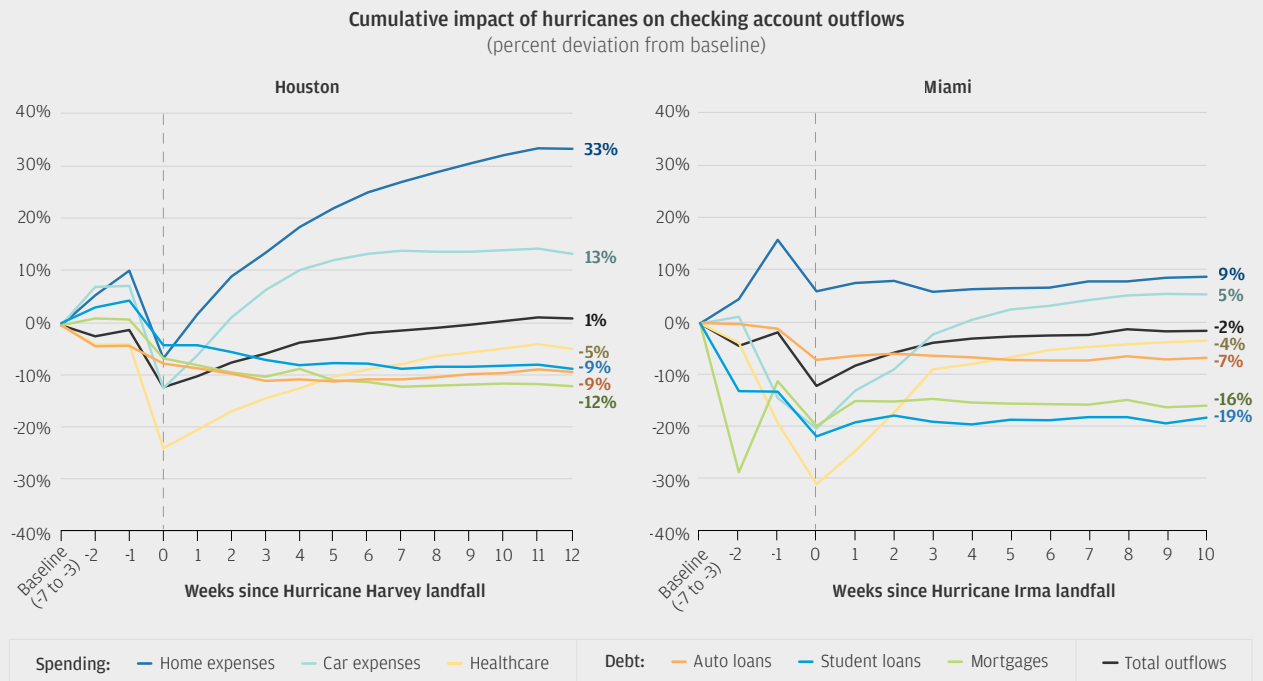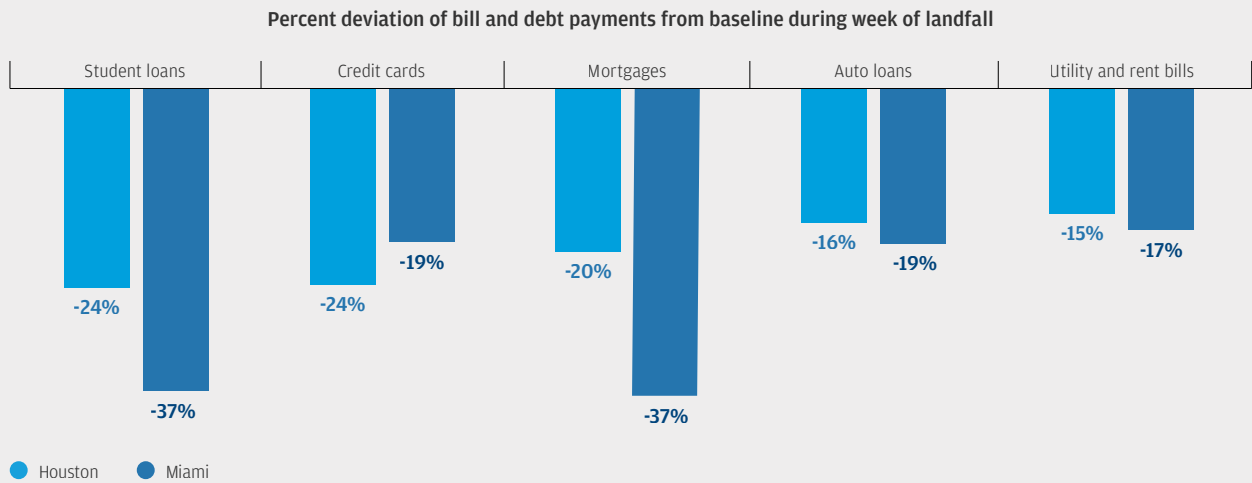
In Farrell and Greig (2018), we examined the impacts of hurricanes Harvey and Irma on checking account inflows and outflows for 1 million families living in Houston or Miami. We found that in the week after the hurricanes made landfall, checking account inflows, including income and transfers, dropped by 20 percent, and outflows, including both spending and debt payments, dropped by 30 percent.

Figure 5.2 illustrates that student loans were one of the bill payment categories that dropped the most in the week after landfall in both Houston and Miami. In both cities, families had still not caught up on their student loan payments several months after the storms, and, in fact, student loan payments were one of the expenditure categories on which families remained most behind relative to baseline.

Student loan payments are more sensitive to income events than most other debt payments.

Figure 5.2: Student loan payments were one of the bill payment categories that dropped the most in the weeks after landfall, in both Houston and Miami

Percent deviation of bill and debt payments from baseline during week of landfall

Student loans	Credit cards	Mortgages	Auto loans	Utility and rent bills

Student loans: -24% (Houston), -37% (Miami)
Credit cards: -24% (Houston), -19% (Miami)
Mortgages: -20% (Houston), -37% (Miami)
Auto loans: -16% (Houston), -19% (Miami)
Utility and rent bills: -15% (Houston), -17% (Miami)

● Houston ● Miami

Cumulative impact of hurricanes on checking account outflows
(percent deviation from baseline)

Houston

33%
13%
1%
-5%
-9%
-9%
-12%

Weeks since Hurricane Harvey landfall

Miami

9%
5%
-2%
-4%
-7%
-16%
-19%

Weeks since Hurricane Irma landfall

Spending: — Home expenses — Car expenses — Healthcare Debt: — Auto loans — Student loans — Mortgages — Total outflows

Source: JPMorgan Chase Institute

Thus, in two very different settings—job loss and the expiration of UI benefits as well as hurricanes—we have documented that student loan payments are sensitive to income shocks and even more sensitive than other types of debt payments. One important difference between these contexts is that in the case of job loss, borrowers may be offered forbearance on their student loans but not on other loan types, whereas in the case of a hurricane they may be offered forbearance on all of their loan types. To the extent that families cut their student loan payments more than other loan payments, this could reflect families taking advantage of the greater leniency that exists with respect to student loan repayment plans and weaker consequences of not repaying.

Finally, it is worth acknowledging that while these event studies provide evidence that student loan payments are sensitive to large income swings, such as job loss or a hurricane, they are not generally correlated with month-to-month income fluctuations. We tested this among our Payment History Sample by regressing the presence and magnitude of a student loan payment in a given month for a given family on the log of take-home income (in the current or prior month) or end-of-month checking account balance in the prior month; an indicator for non-zero take-home income or checking account balance, respectively; and family fixed effects.

We found that across time within a family, the likelihood and magnitude of student loan payments are essentially uncorrelated with take-home income or liquid assets on a month-to-month basis. The correlations are positive and statistically but not economically significant: for example, in months in which take-home income is 20 percent higher than average, a family is only 0.2 percentage points more likely to make a student loan payment. Thus while income is correlated with making student loan payments within families in the context of large income swings, such as job loss or a hurricane, this correlation is not strong in a more typical month. This may be because, as we have shown in previous research, month-to-month income volatility is generally high, and a large part of it is due to within-job pay volatility, such as changes in paycheck amounts and calendar effects (e.g. months with five Fridays), and may not represent true financial hardship for a family (Farrell and Greig, 2016).

We construct two event studies—a Payment Start Event Study, based on a family's first observed student loan payment, and a Payment Stop Event Study, based on a family's last observed student loan payment. In the absence of loan origination data, we require six months of $0 student loan payments prior to the first payment in the Payment Start Event Study. We then observe the families in the sample for 24 months following the initial payment. The Payment Stop Event Study follows an analogous specification around the final observed student loan payment. (See the Data Asset section for detailed sample requirements and attributes for both studies.)

Recognizing the high prevalence of, and many reasons for, $0-payment months (see Box 1) and without the benefit of student loan balance information, in the Payment Start Event Study we cannot fully distinguish between families making a student loan payment for the very first time versus restarting their payments after a spell of no payments. Similarly, in the Payment Stop Event Study we cannot distinguish between families temporarily pausing their student loan payments versus making a final payment to completely pay off their loan.[20] Nonetheless, in each instance the focus and unique contribution of our analysis is to shed light on what financial circumstances coincide with families starting or stopping their student loan payments.

We observe pronounced changes in aggregate measures of income, liquid assets, and debit and credit card spending in the months leading up to families starting student loan payment, as well as the months following the completion or pausing of payments (Figure 5.3).[21] Labor income and labor force participation, as measured by the percentage of each sample receiving labor income, increase sharply leading up to the first student loan payment. As shown in Figure A.3 in the Appendix, there is also a small increase in other income sources at the time of starting payment. This aligns

with the hypothesis that customers initiate (and continue) student loan payments after securing the means to pay.

We also see a sharp increase in liquid assets and monthly credit and debit spending in the months leading up to the start of payment, possibly due to the concurrent growth in income. Growth continues at a lower, but still noticeably positive, rate for both metrics throughout the event study. The proportion of families making auto loan or mortgage payments also increases over time, indicating increasing acquisition of key assets and access to credit (see Figure A.3 in the Appendix).

Overall, we observe many indications of continuous improvements in overall financial health and security

for student loan payers over time after they start student loan payment. It is worth acknowledging that both event studies took place during a period of overall economic growth (October 2012 through July 2018), in which we observed secular upward trends in income and spending. Whether the growth in financial outcomes among student loan payers would have been more pronounced in the absence of student loan debt, however, is a counterfactual question best addressed in future work (see Conclusion and Implications section).

In the context of the Payment Stop Event Study, we observe an uptick in liquid assets just before the last observed payment prior to stopping. However, we observe a decrease in income and labor participation after

the last observed student loan payment. Liquid assets and credit and debit expenditures also decrease following the stop of student loan payments. These aggregate views may be masking several distinct stories. Some families may be completely paying off their loans, either on schedule or ahead of schedule (perhaps following a large positive cash flow event), or no longer paying on behalf of another borrower. We would not necessarily expect a drop in income or labor participation among these families. Meanwhile, other families may be stopping payments due to a financial hardship, deferment, or a $0 IDR plan payment. Below, we attempt to parse the distinct stories underlying these aggregate trends.

Figure 5.3: Income, liquid assets, and spending increase prior to starting student loan payments and decrease after stopping student loan payments

Payment Start Event Study

Median credit & debit card spend, liquid assets, and labor income

Proportion of sample with labor income as inflow

Payment Stop Event Study

Median credit & debit spend, liquid assets, and labor income

Proportion of sample with labor income as inflow
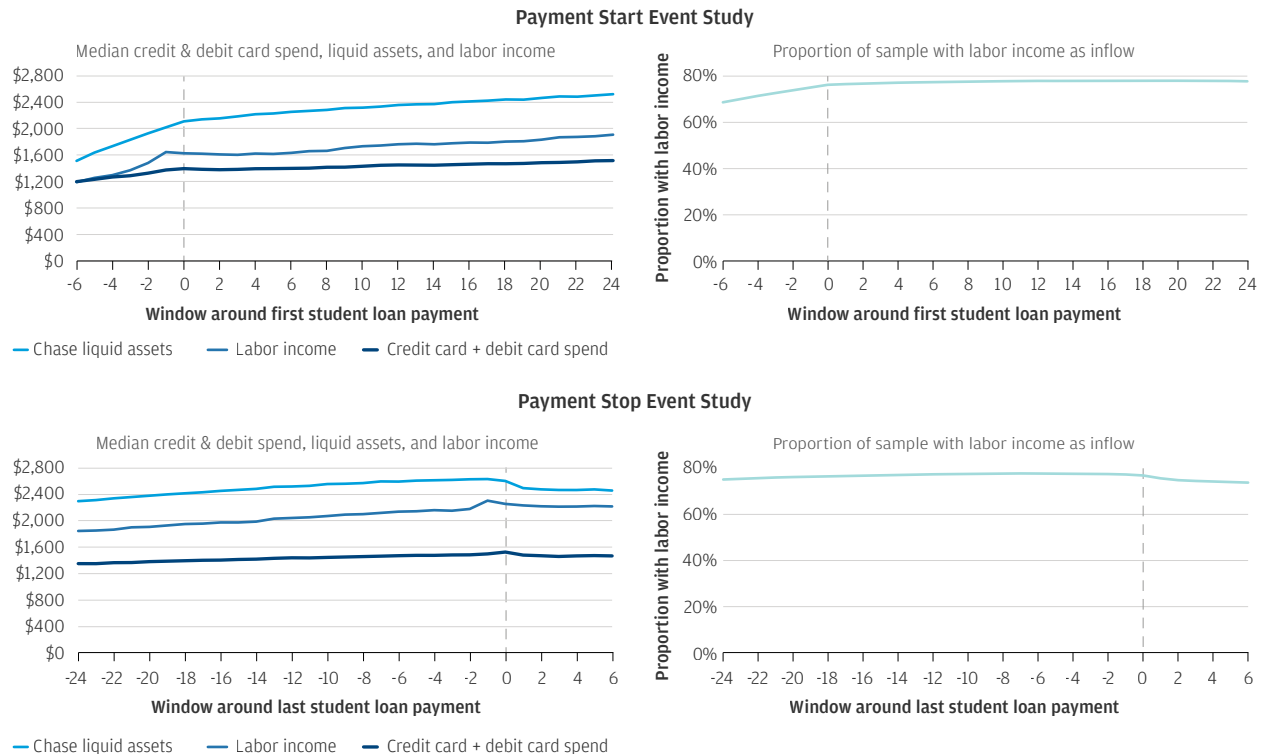
The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.
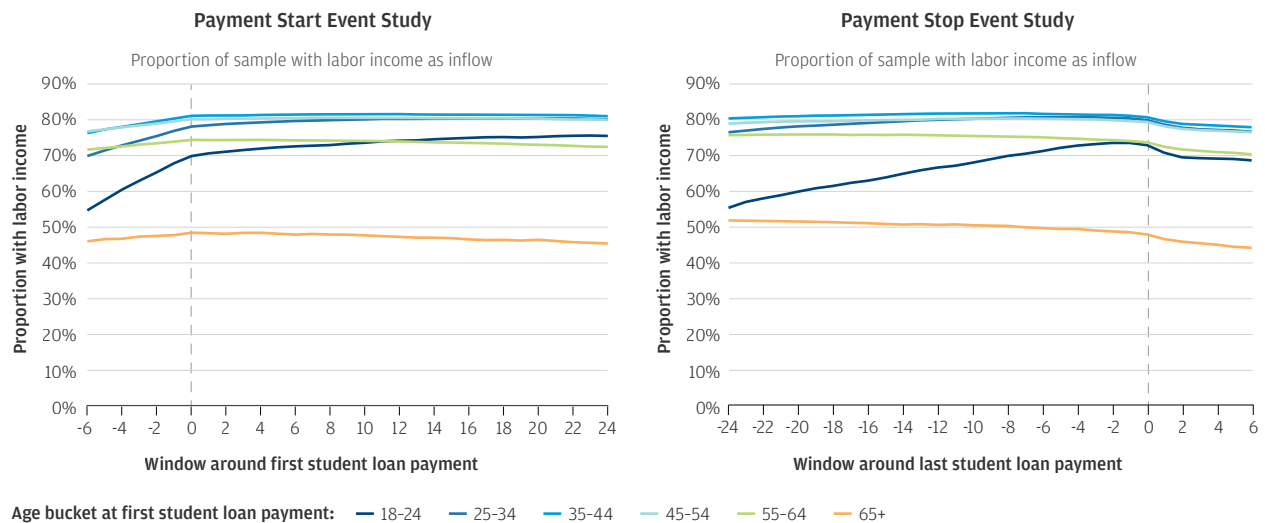
Source: JPMorgan Chase Institute

Figure 5.4. shows the share of families with labor income around the start and stop of student loan payments by age of the primary account holder. For some families, the start of student loan payments may represent the completion of schooling and attainment of initial employment after the initial grace period. Indeed, we see stronger growth in labor force participation prior to the start of student loan payments among payers under the age of 35. However, the growth of income prior to starting student loan payments exists across all age groups, indicating that (as would be expected) across the age spectrum income is consistently a factor that influences when families start student loan payments.

Figure 5.4: Across age groups, the proportion of families receiving labor income increases prior to starting student loan payments, and decreases after stopping

Payment Start Event Study
Proportion of sample with labor income as inflow

Payment Stop Event Study
Proportion of sample with labor income as inflow

Age bucket at first student loan payment: — 18-24 — 25-34 — 35-44 — 45-54 — 55-64 — 65+

The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

> While income decreases on average following the final observed student loan payment, it remains steady for most families.

Similarly, in the Payment Stop Event Study we examine whether younger payers are driving the overall decrease in income after the last observed student loan payment, perhaps signaling either financial hardship (e.g. deferment) or continuing education.

While the effects are slightly more pronounced among the youngest student loan payers, we again observe the same income trends across age groups. Decreases in labor income coincide with a pause or stop to student loan payments across the age spectrum. Thus, even if loan termination or prepayment is a more likely explanation for the payment stop event among older borrowers, there could be at least some older borrowers who are stopping payment due to financial hardship.
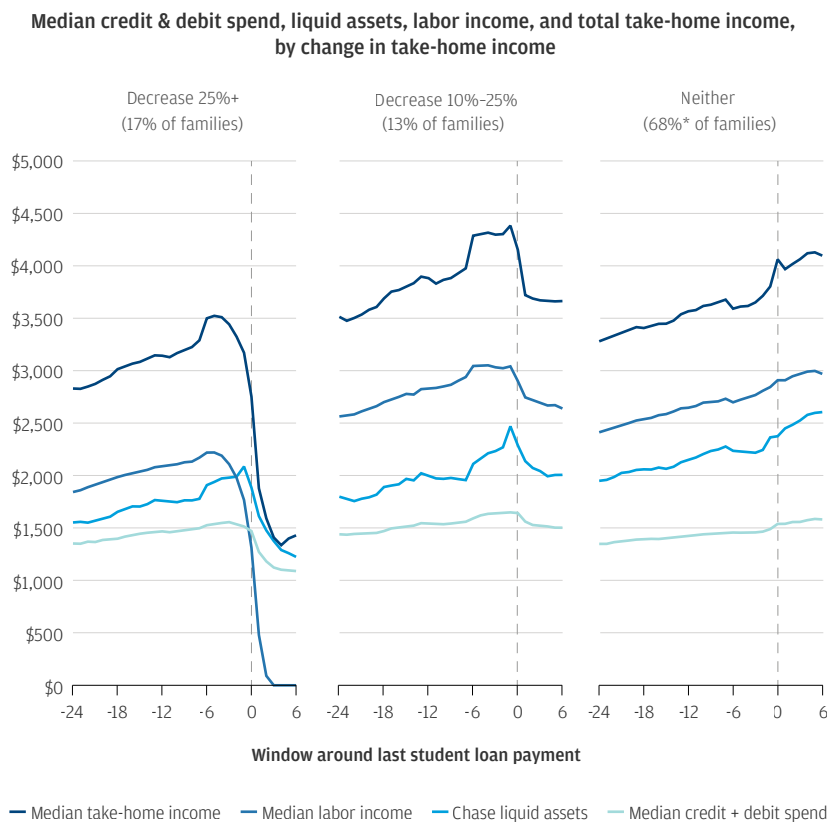
As a final step, we assess families in the Payment Stop Event Study based on the trajectory of their median total take-home income in the six months preceding versus the six months following final observed payment.[22] We find that 30 percent of families who stopped making student loan payments experienced a drop in median total take-home income of 10 percent or more around the same time, including 17 percent of families who experienced a drop in median total take-home income of 25 percent or more. Among the families stopping payment, 68 percent did not experience a decrease (take-home income after stopping payments was greater than 90 percent of pre-stopping income), and 2 percent could not be categorized due to median monthly take-home income of zero prior to stopping student loan payments.

Figure 5.5 shows the path of total take-home income, labor income, liquid assets, and credit and debit card expenditures for each of these groups around the time that they stop student loan payments. We see that families whose take-home income decreased by 10 percent or more drive the aggregate decreases in financial metrics seen in Figure 5.3, in that they experience sharp decreases in liquid assets, other loan payments, and spending patterns. Put differently, those families who stop their student loan payments concurrent with a decrease in income cut back in other areas of their finances as well. In contrast, families that did not experience a significant drop in income (68 percent of the sample) exhibit continued growth in financial metrics after stopping student loan payments. This underscores the extent to which cash flow dynamics, and specifically a drop in income, coincide with a pause in student loan payments.

Taken together, the consistent pattern that emerges across both event studies is that families start and continue student loan payments when their income increases, and a significant subset of families stop making student loan payments when their income decreases.

Figure 5.5: For the Payment Stop Event Study, decreases in liquid assets and spending are driven by families experiencing decreases in income

Median credit & debit spend, liquid assets, labor income, and total take-home income, by change in take-home income

Window around last student loan payment

— Median take-home income — Median labor income — Chase liquid assets — Median credit + debit spend

* Not shown are the 2 percent of families whose median monthly total take-home income was zero in the six months before stopping student loan payments.

Sample of accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

Conclusions and
Implications

In this report we have leveraged, for the first time to our knowledge, checking account data to provide descriptive statistics on the levels, burdens, and financial circumstances of student loan payments. The connection between student loan payments and a borrower's broader financial life has been a critical missing link in understanding the financial consequences of the growing student loan debt market for families. Insights from this new, high-frequency cash flow view of student loan repayment behavior have important implications for policymakers, financial institutions, and institutions of higher education. In conclusion, we highlight a few key takeaways.

There are important segments of the population who are still significantly burdened by student loan payments, especially younger and lower-income account holders. Enrollment in income-driven repayment programs has grown tremendously and now accounts for roughly 30 percent of borrowers. Still, we found that account holders under 35 years old and families with less than $50,000 in gross income were considerably more burdened by student loan payments than their counterparts. In addition, for at least a quarter of families, on a cash flow basis their burden levels in a typical month would likely exceed the payment-to-discretionary-income thresholds stipulated by income-driven repayment programs. This suggests that these relief measures may not be reaching the full breadth of their target population or addressing the cash flow realities of high-burden months.

Student loan payments are sensitive to large income changes. We observe that families with lower incomes make student loan payments less consistently than higher-income families, and also less consistently than they make auto loan and mortgage payments. When we examine within-family fluctuations in income, we see that student loan payments are quite sensitive to large income events such as job loss, the expiration of UI benefits, and hurricanes. This is consistent with our mortgage work, in which we observe that for borrowers who defaulted on their mortgage, default closely followed a negative income shock regardless of prior income level or payment burden (Farrell et al., 2018). In addition, families start student loan payments concurrent with a rise in income and liquid assets, and a significant portion of families stop student loan payments concurrent with a large drop in income. This calls into question the flexibility of the recertification process IDR programs entail. While borrowers may recertify their income more frequently than the annual requirement, each update requires submission of a new application to the IDR program. This may discourage more frequent updates and is impractical as a mechanism for handling month-to-month income fluctuations. With just half of families making payments in more than 90 percent of months and also varying the payment magnitude in positive payment months, options that allow families to more easily or automatically

adjust their student loan payments to address more frequent income changes could serve families well.

Families may be benefiting from the greater leniency that exists with student loan repayment compared to other loan types. As noted above, there are a number of ways in which borrowers have more flexibility in how and when to repay student loans, relative to credit cards, auto loans, and mortgages. This includes IDR plans, forbearance, and differences in timing and consequences of default. The fact that people make student loan payments less consistently than auto loan and mortgage payments could suggest that people are benefiting in the short run from the relative repayment leniency inherent in student loan contracts. This may have negative consequences for borrowers in the long run, given the potential for loan balances to increase over time if payments do not cover interest owed and the fact that borrowers cannot be absolved of their student loan obligations through bankruptcy. Additional research is needed to determine whether the negative consequences of this flexibility outweigh the benefits.

There may still be better ways to structure or implement student loan repayment plans that would ensure that families are not over-burdened by student loan payments. While recent evidence suggests that IDR programs are helping borrowers avoid default, buy homes sooner, and align their repayment obligations with their

ability to pay (Herbst, 2019), policy-makers and advocates still under-score a number of ways in which the student loan landscape is "broken." These include a confusing array of specific income-driven repayment options, which borrowers must opt into and then recertify their income on an annual basis in order to con-tinue to qualify, and high rates of no or low repayment amounts, which can result in increasing loan balances and longer repayment timeframes (Kreighbaum, 2019; Dynarski, 2018; Gibbs, 2017). The opt-in nature of these programs and annual income recertification requirement may limit their reach and make forbearance the quickest and easiest path to payment relief in the face of financial hardship (GAO, 2018).[23] Failure to enroll and remain in IDR programs means that eligible borrowers face unnecessarily high student loan payment burdens, not to mention increased borrowing costs on their student loans and other credit products if they fail to pay.

In light of these administrative bur-dens, some policymakers and thought leaders have proposed alternative student loan repayment mechanisms, such as automatic payroll deduction (Dynarski, 2018; Kreighbaum, 2019). Automatic payroll deductions would directly tie student loan payments to income fluctuations, forcing them to zero when someone loses their job, but also ensuring a payment is still made, albeit a smaller one, when their income dips. However, this approach would also remove the ability of payers to prioritize across financial obliga-tions according to their own needs.

Setting aside the terms of student loan repayment, revisiting underwriting and federal student aid criteria and considerations might also help address the root of the student loan repayment problem. The federal government does not apply risk-based underwriting, which could lead to borrowers taking on too much debt and being overly burdened by repayment costs. In con-trast, the private student loan market does apply actuarial pricing and, as a result, targets more creditworthy bor-rowers to whom they can offer com-petitive interest rates compared to the federal pool, thereby putting upwards pressure on interest rates in the fed-eral direct loan program (Cox, 2017).

> Pairing loan information with our existing data assets, future work will further explore the impact of student loans on families' financial lives.

Colleges and universities, employ-ers, and financial institutions may have a role to play in helping bor-rowers manage their student loan debt. Although all institutions of higher education are at risk of losing eligibility to participate in the Federal Direct Loan and Federal Pell Grant programs if their federal student loan default rate exceeds 30 percent, recent Department of Education pub-lications highlight that some higher education institutions manage their federal default rates better than oth-ers.[24] Historically Black Colleges and Universities, in particular, have taken innovative approaches to reduce defaults, including increasing borrower awareness by addressing student loan topics in orientation sessions and exit counseling, and proactive tracking of,

and outreach to, student loan borrow-ers (Department of Education, 2018a).

More broadly, there may be a case to be made for employers to play more of a role in providing student loan repay-ment relief and financial education to younger and lower-income employ-ees to inform them of their repayment options. In fact, employers are increas-ingly starting to offer student loan repayment assistance as an employee benefit, by facilitating student loan refinancing and payroll deductions and providing matching contributions or outright repayment assistance on student loans (Friedman, 2018).

Finally, financial institutions with stu-dent loan portfolios and fintech solu-tions could play a more active role in nudging customers to make student loan payments, particularly when their income spikes or during high-balance moments. Financial institutions could also inform student loan payers of income-driven repayment programs and other payment relief options when their income or liquid assets dip.

Administrative financial data have great potential to further inform the student loan debate and how student loans impact borrowers' financial lives. With plans to pair checking account data with student loan portfolio data and credit bureau data, in the future we aim to leverage this unique data asset to offer a per-spective on the counterfactual impacts of student loans on a range of family financial outcomes. Coupling loan sta-tus details with the payment behaviors observed via families' banking transac-tions will enable deeper understanding of the decisions made by borrowers as they repay student loans, and how those decisions play out in the con-text of their broader financial lives.

Data Asset and
Methodology

Construction of our samples

For this study, we assembled several distinct data assets from an overall sample of JPMorgan Chase families that made student loan payments from their Chase checking accounts.

To arrive at this overall sample of student loan payers, we began with a universe of 39 million families with Chase checking accounts. This universe contains administrative banking data for each account, after removing all identifying characteristics of account-holders and transactions. Privacy is a top priority, and the JPMorgan Chase Institute has a set of rigorous processes in place to protect the privacy of all JPMC customers. See Box 3 for details.

Box 3: JPMC Institute—Public Data Privacy Notice

The JPMorgan Chase Institute has adopted rigorous security protocols and checks and balances to ensure all customer data are kept confidential and secure. Our strict protocols are informed by statistical standards employed by government agencies and our work with technology, data privacy, and security experts who are helping us maintain industry-leading standards.

There are several key steps the Institute takes to ensure customer data are safe, secure, and anonymous:

- Before the Institute receives the data, all unique identifiable information—including names, account numbers, addresses, dates of birth, Social Security numbers, and Employer Identification Numbers (EIN)—is removed.

- The Institute has put in place privacy protocols for its researchers, including requiring them to undergo rigorous background checks and enter into strict confidentiality agreements. Researchers are contractually obligated to use the data solely for approved research and are contractually obligated not to re-identify any individual represented in the data.

- The Institute does not allow the publication of any information about an individual consumer or business. Any data point included in any publication based on the Institute's data may only reflect aggregate information.

- The data are stored on a secure server and can be accessed only under strict security procedures. The data cannot be exported outside of JPMorgan Chase's systems. The data are stored on systems that prevent them from being exported to other drives or sent to outside email addresses. These systems comply with all JPMorgan Chase Information Technology Risk Management requirements for the monitoring and security of data.

The Institute provides valuable insights to policymakers, businesses, and nonprofit leaders. But these insights cannot come at the expense of customer privacy. We take precautions to ensure the confidence and security of our account holders' private information.
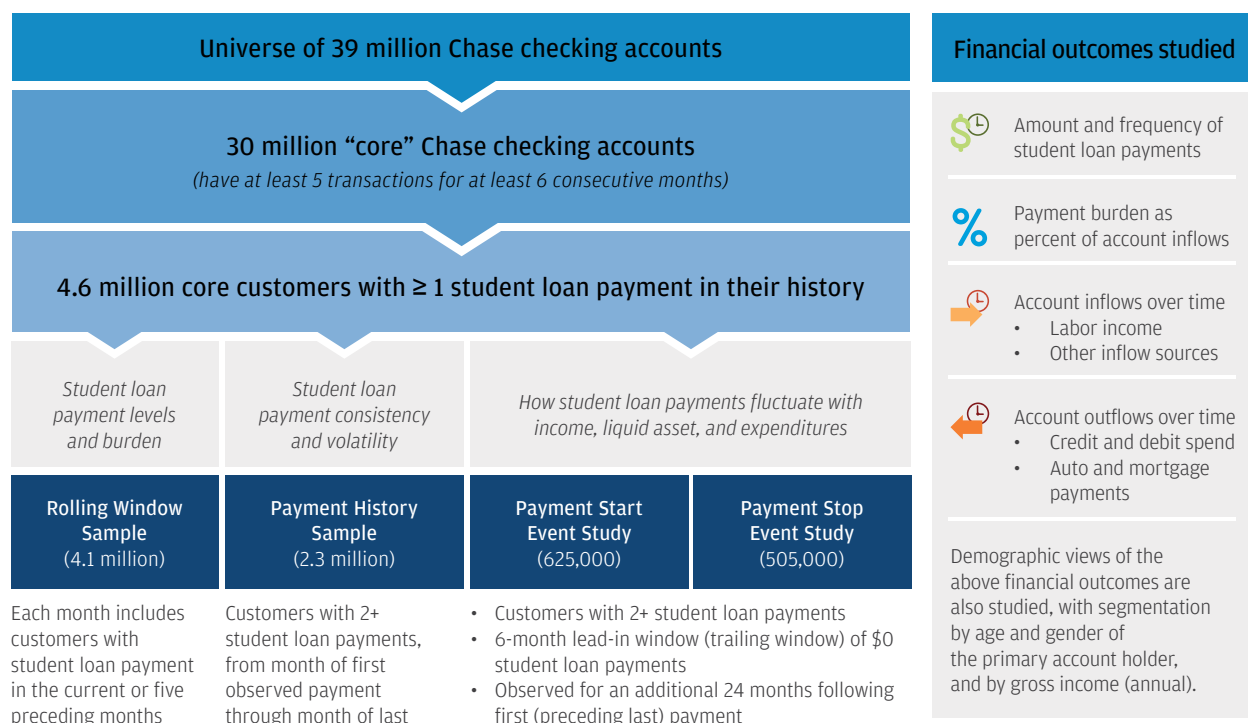
From this universe of 39 million families, we constructed a sample of families who meet our activity screen for at least six consecutive months. To meet this screen for a given month, an account must have at least five outflows from the account for that month and average at least $4,800 in annual take-home income. Applying these criteria reduced our sample to 30 million. The purpose of these criteria is to ensure confidence that we have a reasonable window into the finances of each family in the study by removing from consideration those accounts that are not sufficiently active and are therefore unlikely to be the primary vehicles through which a family manages their finances.

After identifying the families that meet our eligibility criteria, we subset to keep only those that made student loan payments via electronic transfer (ACH) from their Chase checking account in any month of our study window (October 2012 through July 2018). This resulted in a sample of 4.6 million families, from which we drew the data assets that inform the analyses described in this report.

All the samples in Figure 6.1 are at the customer-by-month level. We constructed the samples from the 4.6 million customer base as follows:

- **Rolling Window Sample:** Include each family-month in which the family (1) meets the activity screen in the current and preceding five months and (2) makes a student loan payment in at least one of the current or preceding five months.

- **Payment History Sample:** For all families who make student loan payments in at least two months, include every month of data from first through last observed student loan payment. They must meet the activity screen in every month.

- **Payment Start Event Study:** Include families whose first-observed student loan payment is preceded by at least six months with $0 student loan payments. Each family is included from six months prior to the first observed payment through 24 months following that payment, and must meet the activity screen for every month in the sample. Families must have at least two months of observed student loan payments within that analysis window.

- **Payment Stop Event Study:** Include families whose last observed student loan payment is followed by at least six months with $0 student loan payments. Each family is included from 24 months prior to the last observed payment through six months following that payment, and must meet the activity screen for every month in the sample. Families must have at least two months of observed student loan payments within that analysis window.

Figure 6.1: Overview of data universe and student loan data asset construction

Universe of 39 million Chase checking accounts

30 million "core" Chase checking accounts
(have at least 5 transactions for at least 6 consecutive months)

4.6 million core customers with ≥ 1 student loan payment in their history

Student loan payment levels and burden	Student loan payment consistency and volatility	How student loan payments fluctuate with income, liquid asset, and expenditures	
Rolling Window Sample (4.1 million)	Payment History Sample (2.3 million)	Payment Start Event Study (625,000)	Payment Stop Event Study (505,000)
Each month includes customers with student loan payment in the current or five preceding months	Customers with 2+ student loan payments, from month of first observed payment through month of last	• Customers with 2+ student loan payments • 6-month lead-in window (trailing window) of $0 student loan payments • Observed for an additional 24 months following first (preceding last) payment	

Financial outcomes studied

Amount and frequency of student loan payments

Payment burden as percent of account inflows

Account inflows over time
- Labor income
- Other inflow sources

Account outflows over time
- Credit and debit spend
- Auto and mortgage payments

Demographic views of the above financial outcomes are also studied, with segmentation by age and gender of the primary account holder, and by gross income (annual).

Source: JPMorgan Chase Institute

Table 6.1 provides demographic attributes of each of these samples and shows that while the Rolling Window and Payment History samples are fairly comparable, the Payment Start Event Study Sample is generally lower-income, while the Payment Stop Event Study Sample is generally older and higher-income.

Table 6.1: Family-level summary statistics by sample; metrics are averaged within family before taking the median across families (within-family event study age is measured at start/stop month, respectively)

Sample	Median estimated gross income	Median take-home income	Median age
Rolling Window Sample	$62,600	$43,100	33
Payment History Sample	$65,700	$46,500	34
Payment Start Event Study	$52,800	$38,300	33
Payment Stop Event Study	$69,500	$45,100	38

Source: JPMorgan Chase Institute

How our data and samples differ from the nation and existing data sources

To ensure accuracy of our data relative to the existing body of work on student loan payments, we compared our Rolling Window Sample with key metrics from the Survey of Consumer Finances (SCF). The left panel of Figure 6.2 shows the incidence of student loan payers in the JPMorgan Chase Institute sample in 2016 compared to the 2016 SCF. Although the overall incidence is comparable in the two samples (13.5 percent in our sample compared to 13.4 percent in the SCF), within most age groups we observe slightly lower payment incidence than the SCF. This lower payment incidence within each age group could be due to the fact that we only observe when families make a student loan payment via electronic transaction channels and miss payments made via cash or paper check.[25] In addition, the discrepancy may reflect the difference between stated answers to a survey question regarding current student loan payments, compared to student loan payments observed through administrative banking data. The comparable aggregate payment incidence is due to the fact that our sample slightly over-weights younger individuals compared to the nation (see Table 6.2).

In addition, the center panel of Figure 6.2 shows that median monthly student loan payment amounts by age are broadly similar between the SCF and JPMCI data, especially for the age groups that constitute the majority of the student loan-paying population (ages 18-44).[26]

Finally, it is important to understand how our data compares with the U.S. population more broadly, to identify any discrepancies or areas of weak representation. As our student loan samples are drawn based on the above processes, our samples exclude several categories by definition:

Families who do not have a Chase checking account: By relying on data from Chase customers, we are less likely to see certain segments of the U.S. population. In particular, unbanked and under-banked Americans are unlikely to appear in our data, while high-net-worth individuals are also excluded for mechanical reasons. We are therefore best able to provide insight on families falling in the middle of the income distribution. In addition, Chase Bank has retail presence in 23 states, meaning that our sample of checking account customers consists primarily of residents of these states. While these 23 states are broadly representative of the United States, they slightly overweight western states.
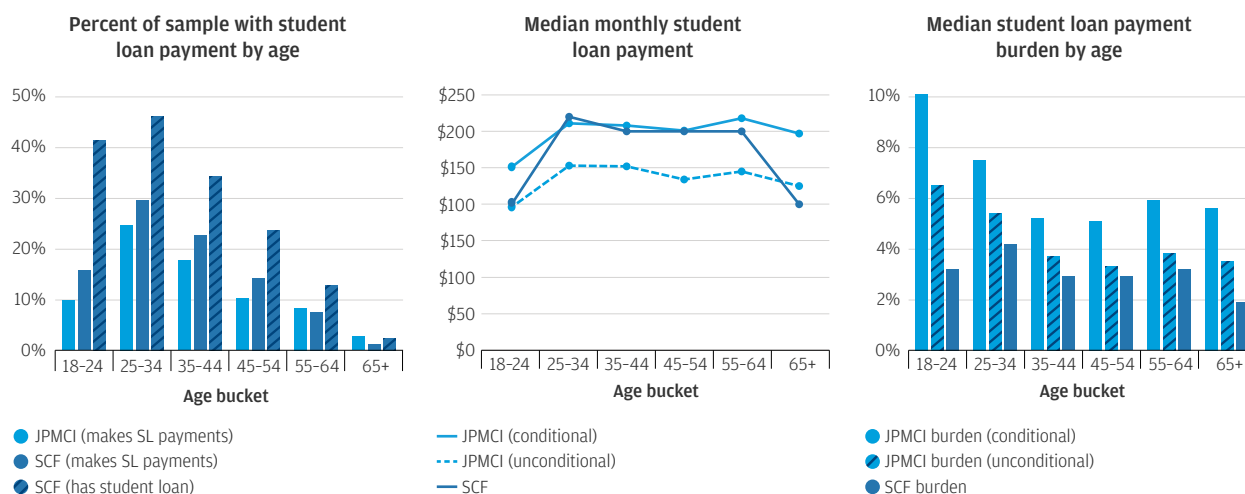
Families with Chase accounts who do not meet the activity screen: Families with Chase checking accounts who do not meet our screens for at least five outflows per month and $4,800 annual take-home income are likely to fall into two categories: (1) under-banked families; or (2) families whose financial activity is primarily with one or multiple other financial institutions.

Families with sufficiently active Chase accounts with no observed student loan payments: As we identify student loan payments via electronic transfer from Chase checking accounts, families making student loan payments by some other means will be excluded from consideration. This includes families making student loan payments from a non-Chase account or via non-ACH methods (e.g. cash or paper check).

Given the above limitations, how representative is our base sample for the families for whom we observe and study student loan payment behavior? To address this, Table 6.2 compares our base population of core checking

account customers in 2016 with American Community Survey (ACS) data from the same year. The JPMCI sample slightly over-represents West Coast states, but there is little reason to believe that this would fundamentally skew our analysis of student loan payers. If anything, the over-representation of primary account holders under age 35 in the JPMCI sample may give us a larger sample of student loan payers than we would expect from a random sample of the U.S. population.

Figure 6.2: Our student loan data asset (Rolling Window Sample) shows similar monthly payment amounts to those measured in the Survey of Consumer Finance (SCF), but a lower incidence of payments; payment burden as a percent of income is difficult to compare due to measurement differences in both payments and income

Percent of sample with student loan payment by age

- JPMCI (makes SL payments)
- SCF (makes SL payments)
- SCF (has student loan)

Median monthly student loan payment

— JPMCI (conditional)
- - - JPMCI (unconditional)
— SCF

Median student loan payment burden by age

- JPMCI burden (conditional)
- JPMCI burden (unconditional)
- SCF burden

Conditional payments and burdens are calculated using only those months in which families make a positive student loan payment. Unconditional payments and burdens additionally include months in which families whom we have identified as student loan payers have no observed student loan payment (i.e., their monthly payment is $0). Base JPMCI sample is all JPMCI customers who meet the transaction screen in all months of 2016. Student loan payers are from the Rolling Window Sample of accounts in 2016. SCF data from 2016 SCF.

Source: JPMorgan Chase Institute

Table 6.2: Our base sample is somewhat younger than the overall U.S. population, and slightly over-represents the West Coast

Demographic		JPMCI	ACS	Difference
Age	18-24	15%	5%	10%
	25-34	24%	16%	8%
	35-44	18%	17%	1%
	45-54	16%	19%	-3%
	55-64	14%	21%	-7%
	65+	13%	22%	-9%
Gender	Female	46%	50%	-4%
	Male	54%	50%	4%
Region	Midwest	22%	22%	0%
	Northeast	18%	18%	0%
	South	27%	37%	-10%
	West	34%	23%	11%

JPMCI sample contains customers who meet the transaction screen in all 12 months of 2016. ACS data is from 2016.

Source: JPMorgan Chase Institute

Description of the Payment Start and Payment Stop Event Studies

To provide context on the nature of these event studies, we first describe student loan payment behavior leading up to and following the month in which families start and stop making student loan payments. Due to the overall flexibility of student loan payment timing, including the number of options resulting in $0 monthly payments, the proportion of the sample making non-$0 payments varies over the course of each event study. For the Payment Start Event Study, the proportion of the sample making non-$0 student loan payments is at its highest the first month of starting repayment, during which period every family in the sample makes a payment. In later months, the proportion of active payers drops to a steady state just above 50 percent.

On a conditional basis, including only families that made positive student loan payments in each month's calculation, the median payment value increases over time following the start of payments. This could be an artifact of selection effects changing the composition of the actively-paying population, as shorter-term payers drop out of the sample, or those with greater ability to pay—higher incomes and/or higher loan balances—remain in active loan repayment. Indeed, the uptick in payment amount following the first twelve months of payments may be evidence of IDR income recertification, leading to higher payment values. Due to increasing incomes over time (see Figure 5.3), the conditional median payment burden decreases slightly over time, even as payment amounts increase.

Figure 6.3: Proportion of sample making >$0 student loan payments, and conditional median payment amount and payment burden over time for the Payment Start and Payment Stop Event Studies
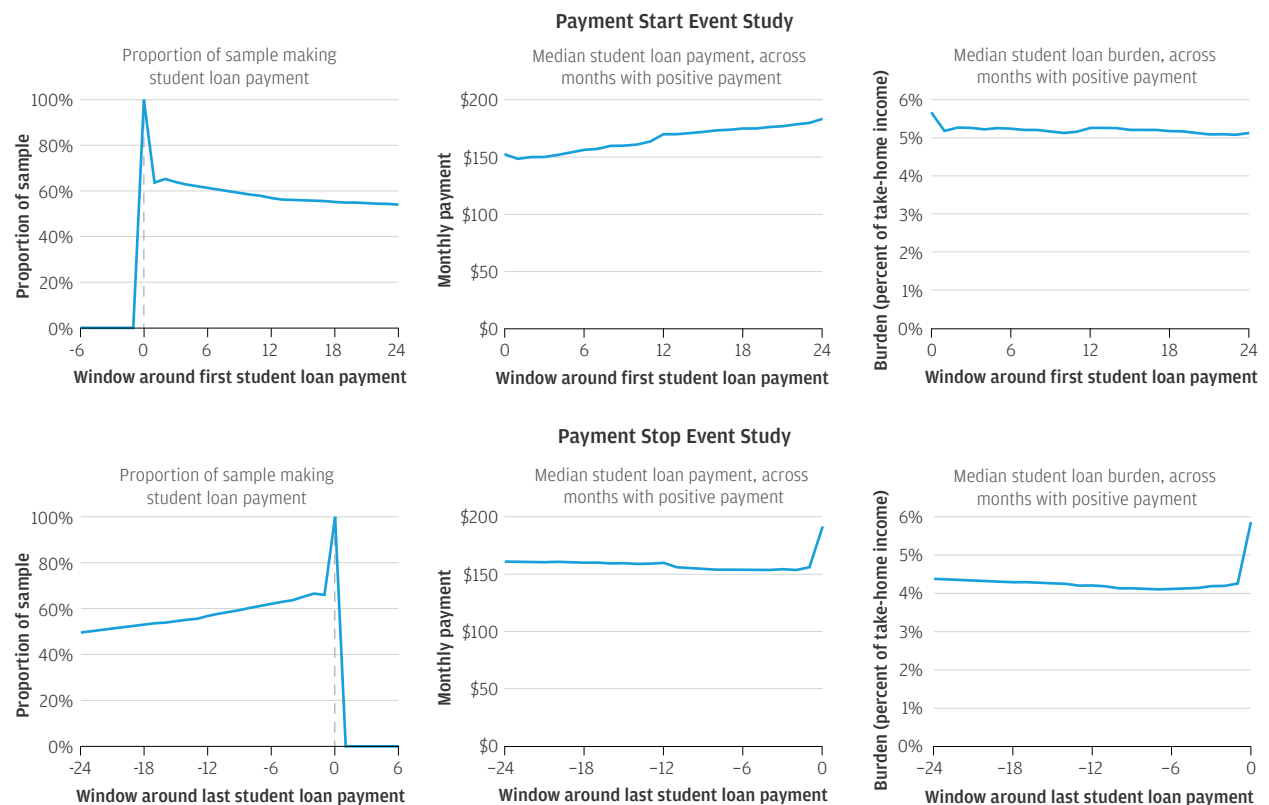
Payment Start Event Study

The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

Turning to the Payment Stop Event Study, we observe similar patterns: an increase in the proportion of the sample making non-$0 payments over time, with every family in the sample making a payment the month of the final payment (by definition). Assessing payment patterns on a conditional basis, we see patterns diverge from those of the payment start group: conditional median is roughly flat over time, with a slight decrease at the start of the final year of payments. Given that we do not see a corresponding change in the proportion of the sample making payments in the final year, this change in payment amount may be another artifact of IDR program payment resets, this time to a lower payment amount. Payment amounts in the final month are much larger than typical preceding months, which could be driven by a subset of families intentionally paying more than required in order to "pre-pay" the remainder of their loan balance early. It could also be evidence of IDR "snap-backs," experienced when a family's automatic payments revert to a higher (and possibly unaffordable) baseline level after missing an annual IDR income recertification.
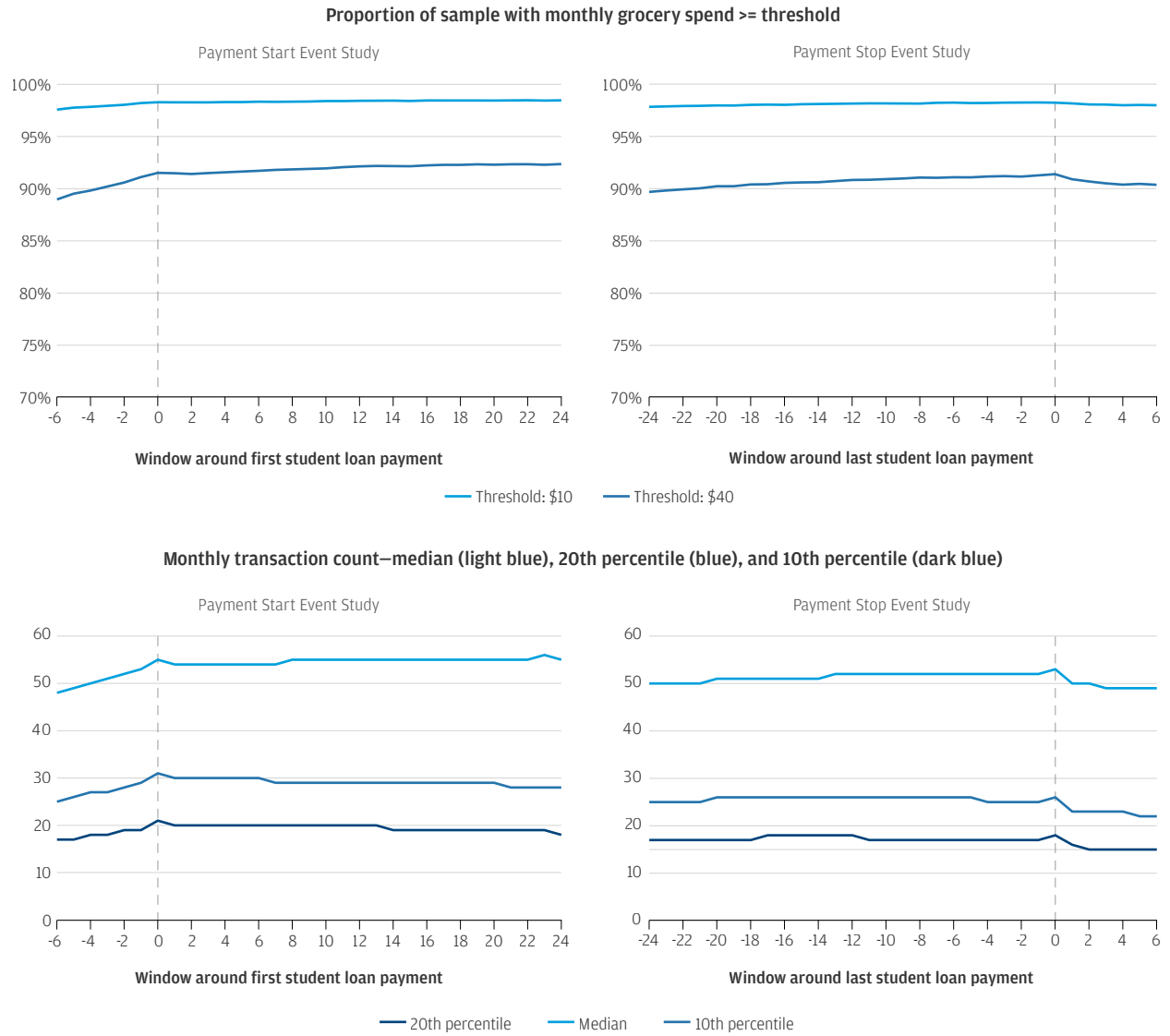
Appendix

Figure A.1: Payment Consistency by joint age-gross income distribution
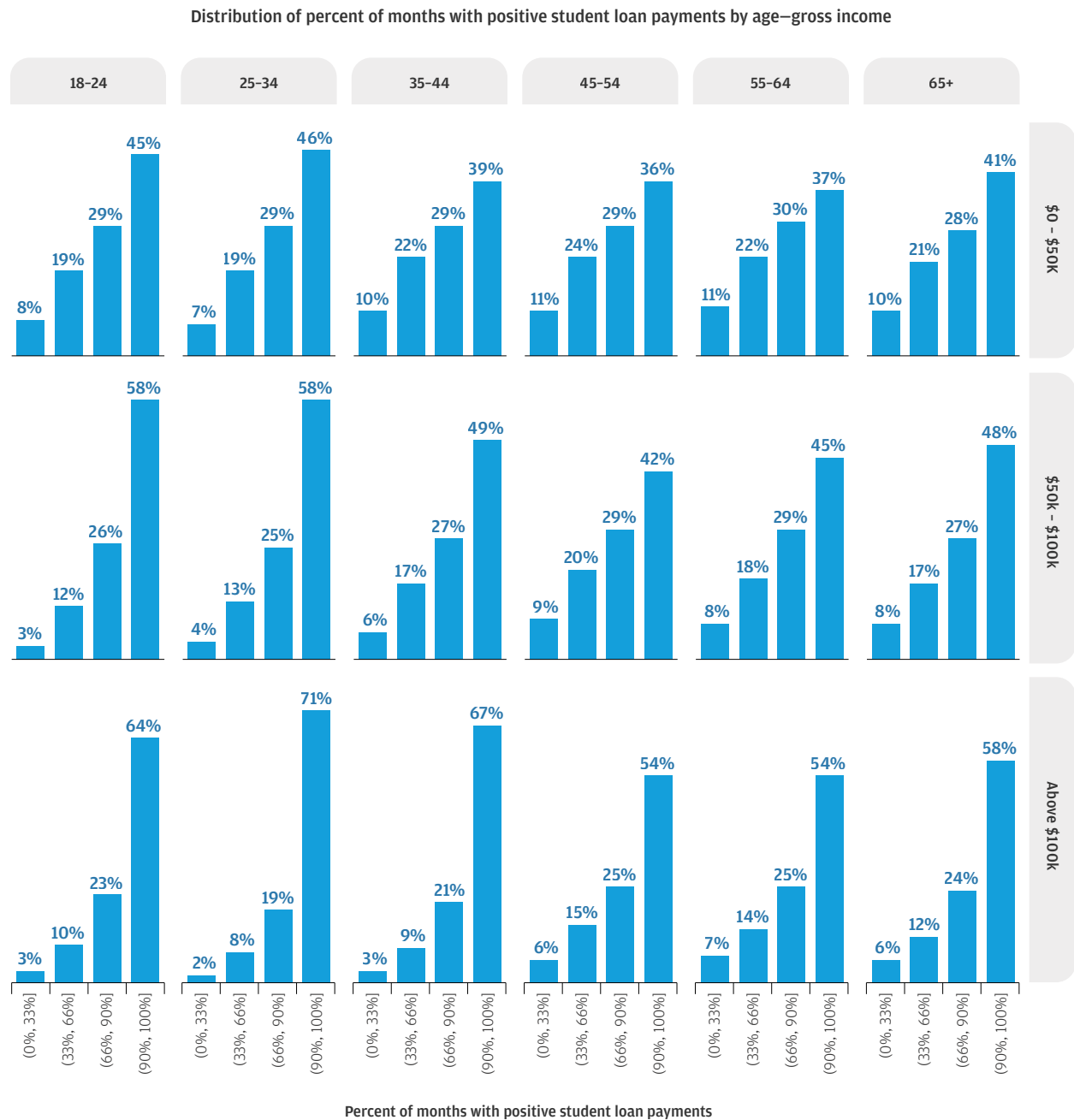
Distribution of percent of months with positive student loan payments by age–gross income

Percent of months with positive student loan payments

Sample of accounts with at least two student loan payments between October 2012 and July 2018. Accounts are included for all months between first and last observed student loan payment.
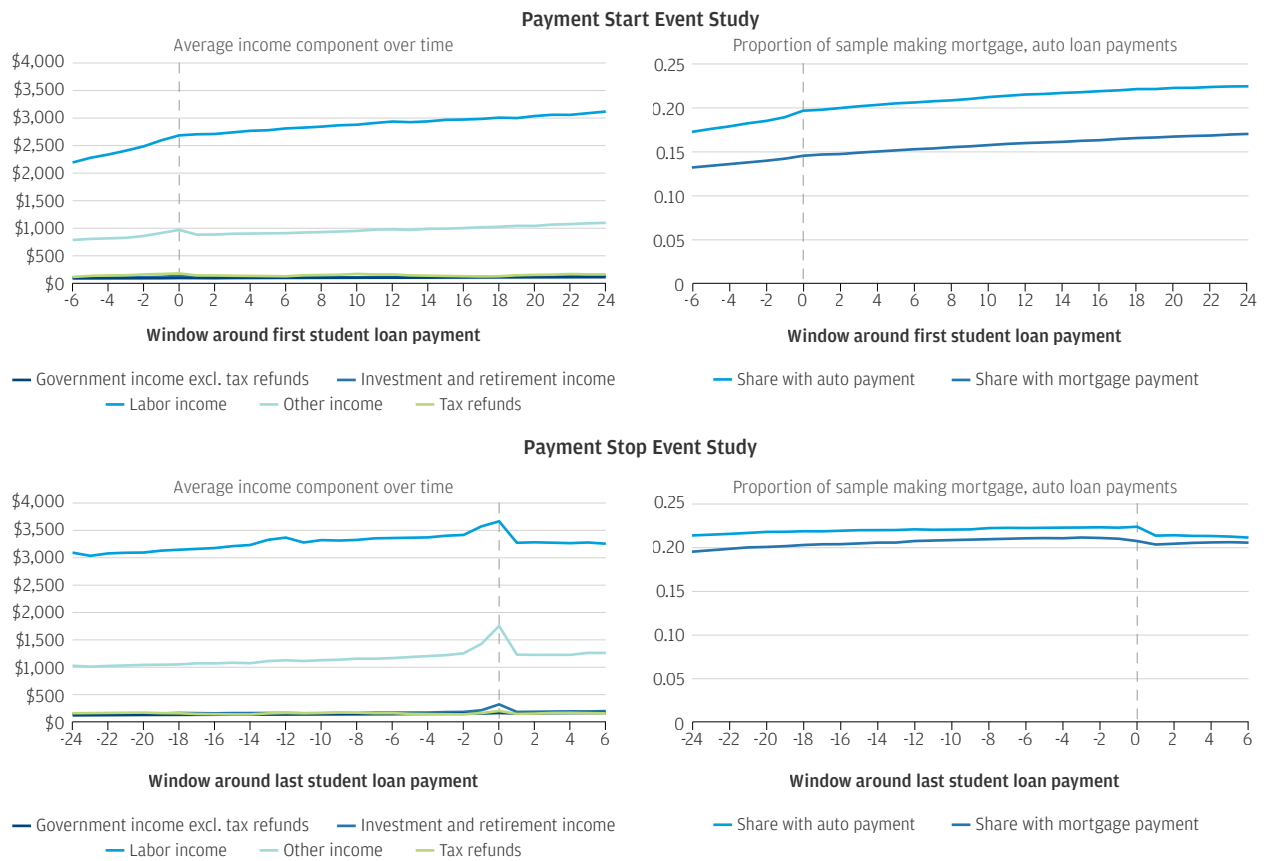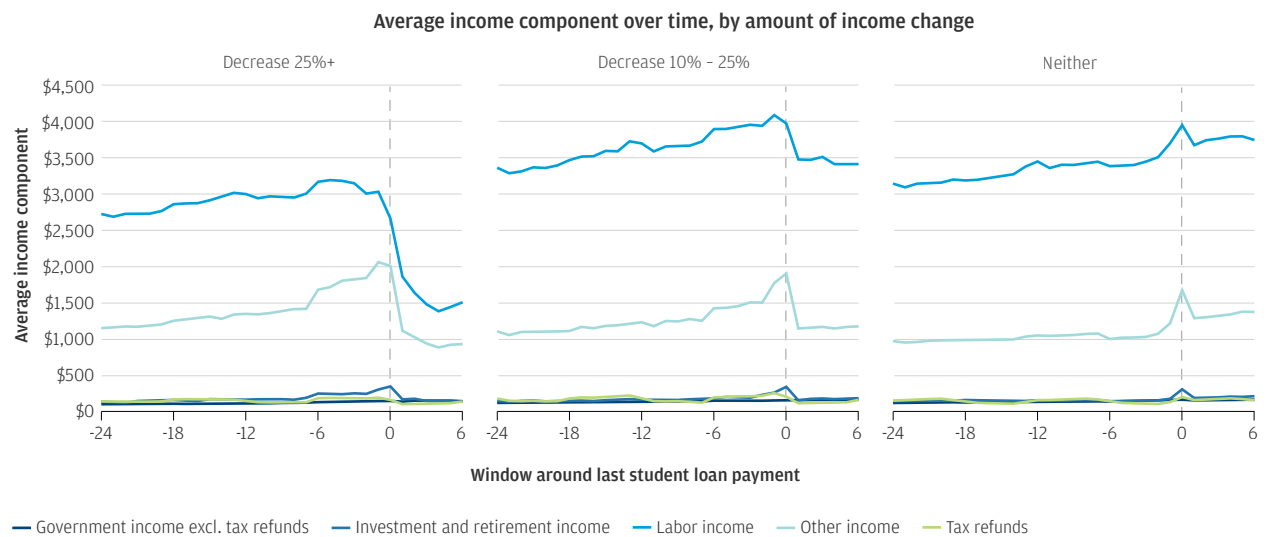
Figure A.2: "Placebo" assessments for event study samples

Proportion of sample with monthly grocery spend >= threshold

Payment Start Event Study

Window around first student loan payment

Payment Stop Event Study

Window around last student loan payment

Threshold: $10 — Threshold: $40

Monthly transaction count—median (light blue), 20th percentile (blue), and 10th percentile (dark blue)

Payment Start Event Study

Window around first student loan payment

Payment Stop Event Study

Window around last student loan payment

20th percentile — Median — 10th percentile

The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Figure A.3: Average income over time by component and proportion of sample making auto loan and mortgage payments, for the payment start and payment stop event studies

Payment Start Event Study

Average income component over time

Window around first student loan payment

— Government income excl. tax refunds   — Investment and retirement income
— Labor income   — Other income   — Tax refunds

Proportion of sample making mortgage, auto loan payments

Window around first student loan payment

— Share with auto payment   — Share with mortgage payment

Payment Stop Event Study

Average income component over time

Window around last student loan payment

— Government income excl. tax refunds   — Investment and retirement income
— Labor income   — Other income   — Tax refunds

Proportion of sample making mortgage, auto loan payments

Window around last student loan payment

— Share with auto payment   — Share with mortgage payment

The Payment Start Event Study includes accounts with first observed student loan payment (x-axis month 0) made between April 2013 and July 2016. The Payment Stop Event Study includes accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

Figure A.4: Separation by change in take-home income for the Payment Stop Event Study

Average income component over time, by amount of income change

Decrease 25%+   Decrease 10% – 25%   Neither

Average income component

Window around last student loan payment

— Government income excl. tax refunds   — Investment and retirement income   — Labor income   — Other income   — Tax refunds

Sample of accounts with final observed student loan payment (x-axis month 0) made between October 2014 and January 2018.

Source: JPMorgan Chase Institute

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Endnotes

1   See Dynarski (2015) and Herbst (2019) for a discussion of the lack of data on student loan repayment. In terms of administrative data sets, which typically offer very large sample sizes, Looney and Yannellis (2015) made a major contribution by linking loan level information from the National Student Loan Data System with IRS tax data, allowing them to observe both educational outcomes, student loan information, and annual incomes. Several scholars have also leveraged credit bureau information, such as those available through the NY Federal Reserve Bank Equifax Consumer Credit Panel and the Consumer Financial Protection Bureau's (CFPB) Consumer Credit Panel, in which they can observe loan information on a quarterly (monthly for CFPB) basis across a range of credit products and evaluate the impacts of student loan debt on other credit and borrowing outcomes (e.g. Amromin et al., 2017; Gibbs, 2018). A recent paper by Herbst (2019) went a step further and linked TransUnion credit bureau data with student loan servicer data from Navient, allowing him to evaluate the impacts of enrollment in IDR programs on credit and borrowing outcomes. Survey data from the Survey of Consumer Finance provides a lens into a more comprehensive array of financial outcomes (e.g. income, assets, liabilities),

albeit for a small sample of families (e.g. 6,248 families in the 2016 survey) and only every three years, but has been used to compute student loan payment to income ratios (e.g. Akers and Chingos, 2014). Survey data from the National Center for Education Statistics (e.g. the National Postsecondary Student Aid Survey and Baccalaureate and Beyond Longitudinal Study) has also been used to study student debt and repayment (Lochner 2016), but again is limited in both sample size and frequency.

2   For each customer, we compute the customer-specific coefficient of variation, defined as the ratio of the standard deviation in monthly payment amount to the mean monthly payment amount.

3   Loans vary in their degree of subsidization and, in particular, whether interest accrues on the loan, resulting in "negative amortization", while the student is making no or low payments that do not cover the interest.

4   Adjusted gross income is defined as gross income less certain tax-related deductions.

5   Federal regulations allow servicers to "apply the prepayment to future installments by advancing the next payment due date, unless the borrower requests otherwise"; see 34 CFR § 682.209 - Repayment of a loan

6   As discussed in the Data Asset section, we observe lower payment incidence than in the SCF, when examined within each age group (Figure 6.2).

7   These estimates are slightly higher than those estimates calculated from the 2016 Survey of Consumer Finance (see Figure 6.2 in the Data Asset section). This likely reflects the fact that income JPMCI observes is take-home income, while income observed in the SCF is gross income.

8   Take-home income is assessed as the sum of all of the inflows that have been categorized as income. This includes payroll income directly deposited via ACH, government benefits, Social Security, and capital income. It also includes paper check deposits and uncategorized ACH deposits. It excludes transfers from other financial accounts and a variety of inflows deposited via channels that provide little information about the nature of the deposit (e.g. cash deposits and wire deposits).

9   The monthly payment under an income-driven repayment (IDR) plan is generally set at 10 percent of "discretionary income," defined as adjusted gross income less 150 percent of the poverty line. The federal poverty line for a family of two in 2016 was $16,020 for the 48 contiguous states and DC, which yields $24,030 when multiplied by

150 percent. To estimate discretionary income for a family with $40,000 of take-home income, we first note that a family in our data with $40,000 in take-home income has gross income of $57,000 on average, with gross income estimated by the JPMC Institute Income Estimate (JPMorgan Chase Institute, 2018). According to the IRS Statistics of Income (https://www.irs.gov/pub/irs-soi/16inline-count.pdf), the average above-the-line deduction (i.e., deductions from gross income to arrive at adjusted gross income) is $1,024, so we assume that a couple with $57,000 in gross income has $55,976 in adjusted gross income. Subtracting off 150 percent of the poverty line, this yields discretionary income of $31,946, and thus monthly student loan payments of $266 on a 10 percent-of-income IDR plan.

10 See U.S. Department of Education (2019).

11 Annual gross income is estimated via the JPMC Institute Income Estimate (IIE) version 1.0. JPMC IIE uses machine learning techniques to estimate annual gross family income based on inflows and characteristics of JPMC accounts, as well as account-holder characteristics (JPMorgan Chase Institute, 2018).

12 As documented by AAUW (2017), this is due to three key factors. First, women represent roughly 56 percent of all students enrolled in colleges and universities in 2016. Second, compared to male undergraduates, female undergraduate students are 5 percentage points more likely to take out student loan debt than male undergraduate students (44 percent compared 39 percent) and take out 14 percent larger loans. Third, women repay their student loans more slowly than men, due in large part because of their lower earnings: by four years after graduation, men had paid off 38 percent of their student loan debt, compared to 31 percent for women.

13 As gender here represents the gender of the primary account-holder, we wanted to ensure that results were not being driven by joint-account dynamics. Joint accounts' primary account-holders are more often male than female, which may drive the higher incomes (multiple paychecks landing in the account) and higher student loan payment amounts (multiple loans paid from the account) for the families coded as "male" in this figure. However, when limiting the assessment to checking accounts with a single authorized user, the resulting patterns are unchanged.

14 In analysis not shown here, we additionally found that the positive correlation between income and student loan payment consistency holds regardless of the age of the primary account holder (see Figure A.1 in the appendix). In other words, the fact that higher-income families are more likely to make consistent student loan payments is not an artifact of older account holders typically having higher gross income. Put differently, even within an age group, lower-income families are less likely to make consistent student loan payments than higher-income families.

15 Coefficient of variation is defined as the customer-specific ratio of (standard deviation of student loan payments)/(mean student loan payment). We only include positive-payment months in our calculations of coefficient of variation.

16 Prepayment of student loans (entailing one or multiple very large payments) is somewhat common (CFPB, 2018).

17 The median coefficient of variation is between 0.32 and 0.37 for every age group, with no systematic correlation between age and coefficient of variation.

18 Specifically, when analyzing auto loan or mortgage loan payments for a family, we analyze these payments for the subset of months between first and last auto or mortgage payment observed for the family. Because this is all happening within the Payment History Sample, the maximum period over which we would examine auto or mortgage payments is from the family's first month through last month of observed student loan payments.

19 We suspect that deferment as a result of enrolling in school or military service, which would likely yield a period of zero payments lasting 12 months or more, is less likely to explain the payment inconsistency observed in our data because we see few customers with a long string of consecutive $0-payment months. We computed the distribution of the maximum number of $0-payment months by customer, and found that 75 percent of customers have four or fewer consecutive $0-payment months, while 90 percent have 13 or fewer consecutive $0-payment months.

20 It is worth noting that the Payment Start Event Study sample is generally younger and lower income than the rest of our student loan sample, while the Payment Stop Event Study sample is generally older and higher income, suggesting that at least some families are making their truly first or last payment in these respective event studies (see Table 6.1 in the Data Asset section).

21 These trends could also be due to the start of student loan payment coinciding with increased usage of the Chase checking account in general. To explore this possibility, we assessed two "placebo" metrics over the same event study windows: the proportion of the event sample purchasing at least $10 or $40 in groceries and the total number of transactions (inflows and outflows) from families' checking accounts (see Appendix Figure A.2). In both cases, the trends are nearly flat over time. In fact, although the sampling criteria require account holders to have a minimum of 5 transactions per month over the course of the event study, 90 percent of account holders had more than 10 transactions per month and the median account holder had more than 40 transactions per month.

22 Income change categories are based on the ratio of: (median take-home income in the six months following final student loan payment) / (median take-home income in the six months preceding final student loan payment).

23 The uptake in IDR programs is low especially among the youngest and lowest income borrowers (SIEPR). In addition, attrition out of IDR programs is high: a recent analysis showed that a year after enrollment in an IDR program just 40 percent of borrowers were still enrolled, possibly because the borrower's incomes had recovered sufficiently to render them ineligible for the program or because they failed to recertify their income (Herbst, 2019). Recent evidence has highlighted that roughly 15 percent of IDR enrollees are unaware of the annual IDR recertification requirements (Navient Services Inc., 2015), and many borrowers complain of high administrative burdens associated with IDR programs (CFPB, 2016).

24 For example, FY2015 official cohort default rates are over 15 percent in aggregate among institutions in West Virginia, New Mexico, and Nevada, and among for-profit institutions (Department of Education, 2018).

25 A recent survey of families making student loan payments estimated that roughly 9 percent of student loan payments are made via paper check, money order, or cash, three payment channels that our data asset would definitely not observe (Albertazzi, 2017).

26 We compare medians rather than means in line with what the SCF survey designers suggest; because the SCF is a weighted survey, it is more robust to computing medians than means.

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Suggested Citation

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