Early Medicaid Expansion Reduced Payday Borrowing in California

Abstract

This study examines the impact of California's early 2011-2012 Medicaid expansion under the Affordable Care Act on the use of payday loans, a form of high-interest borrowing used by low-to-middle income Americans. Using a 2009-2013 dataset that covers the universe of payday loans from five large payday lenders with locations around the country, we implement a difference-in-difference research design to assess the effect of the Medicaid expansion on payday borrowing, comparing trends from California early-expansion counties to trends in non-expanding counties nationwide. Medicaid expansion was associated with an 11-percent reduction in the number of loans taken out each month. Medicaid expansion also reduced the number of unique borrowers each month and the total amount of payday loan debt. The results thus suggest that Medicaid reduced the demand for high-interest loans and improved the financial health of American families.

KEYWORDS: Medicaid, ACA, Finances, Payday Loans

Background

A variety of studies have demonstrated that health insurance coverage lowers the medical debt consumers must take on[1,2]. Lower medical debts, in turn, can improve consumers' credit scores and other credit-related outcomes[3-5]. Few studies have focused on individual financial outcomes related to the recent expansion of health insurance coverage under the Affordable

Care Act[6,7], and no studies have focused on how health insurance coverage affects the use of alternative financial products.

Research on this topic is especially important given the documented relationship between poverty, medical debt, and bad credit outcomes. Those in poverty are more likely to be uninsured and have fewer financial resources to pay for out-of-pocket health care costs[8]. Poor financial health can permeate all aspects of life, making it difficult to secure affordable housing, purchase homes or automobiles, and manage day-to-day expenses. Importantly, those with bad credit have less access to traditional borrowing, such as credit cards or personal loans[9,10].

One form of borrowing that has been increasingly scrutinized by policy-makers is payday loans[11]. Payday loans are short-term, unsecured loans that are primarily used by low-to-middle income Americans in states where the loans are legal. It has been estimated that twelve million Americans take out at least one payday loan annually, with an average of eight loans of $375 each per year, and a total of $520 spent on fees[12]. The loans are advertised as a two-week credit product meant to address temporary cash-flow issues. Critics argue that when the loans' fees are converted into an annualized interest rate, the rates are much higher than other financial products – typically over 300 percent – and many borrowers end up in long-term cycles of debt [12,13]. Low-income adults, defined in one study as those with annual incomes of less than $40,000, are 62 percent more likely than their higher-income counterparts to utilize payday loans[12].

Evidence suggests that payday borrowing occurs when access to traditional credit is most limited[10], supporting the hypothesis that payday loans are perceived as a last resort among consumers[14]. About 16 percent of payday consumers report using payday loans for emergency or unexpected expenses, while 69 percent report borrowing to pay for recurring expenses[12]. Medical debts could be implicated in either category, such as when consumers are faced with unexpected financial shocks (e.g. emergency department visit) or when they are balancing recurring medical expenses (e.g. prescriptions) with competing demands like housing and food.

There is early evidence that Medicaid expansions might be an important policy lever for improving the financial stability of low-income Americans[1,3]. The Oregon Health Insurance Experiment found that Medicaid reduced financial strain and improved the credit outcomes of low-income adults, who experienced fewer medical delinquencies and lower amounts of medical debt. Catastrophic medical liability, defined as exceeding 30 percent of annual income, was almost entirely eliminated[15]. Other studies have confirmed that Medicaid expansion improves credit scores and may reduce rates of bankruptcy[6]. In particular, the Massachusetts health care reform, a coverage expansion remarkably similar to the Affordable Care Act, led to a decrease in bankruptcies and an improvement in credit scores[4]. Going back further, the Medicaid expansions of the 1990s have been shown to decrease the risk of bankruptcy[3].

The fate of existing Medicaid expansions and of future expansions is currently unclear, with Congress and President Trump promising a repeal and replacement of the Affordable Care Act (ACA). As national and state health policy enter a new era of flux, it is critical to have a broad

empirical understanding of the costs and benefits of providing Medicaid to low-income adults, especially populations that historically have not been made eligible for Medicaid.

This study examines the relationship between Medicaid coverage and risky borrowing in the state of California, which was an early adopter of Medicaid expansion through the ACA. Specifically, we compare payday lending in California counties that expanded Medicaid in advance of the ACA's 2014 expansion to counties throughout the United States that had not yet expanded Medicaid.

Study Data and Methods

This study uses a novel source of national payday loan data provided to the authors by an industry trade group, the Community Financial Services Association of America (CFSA). The CFSA shared their data for the purposes of this project and imposed no restrictions on the conclusions of the research beyond preserving the confidentiality of the underlying data. The dataset consists of the universe of payday loans originated by five national storefront payday-lending chains with locations around the country. Over 93 million loans are covered in the dataset, which has been de-identified for research purposes. For each loan, we observe the date that the loan was made and was due, the outcome of the loan (e.g. default, late payment), and the zip code of the payday lender's storefront. The dataset covers all loans from 2009 through the early months of 2014. Appendix Exhibit A1 maps the states included in the CFSA dataset[16].

We focus on the state of California, which entered into an agreement with the Obama administration for early implementation of the Affordable Care Act's Medicaid expansion in 2011 and 2012, on a county-by-county basis. We study the California early expansions, because the CFSA data do not offer a sufficiently long time series to study the 2014 expansions, and offer relatively little coverage in other early-expansion states. We compare early expanding California counties to non-expanding counties nationwide, including four California counties that delayed expansion.

We aggregate the CFSA data to the county-month level, creating aggregate loan counts, default rates, and other measures of loan volume and loan outcomes in each county and month. The aggregated dataset contains 58,020 county-by-month observations for 2009 through 2013, roughly 24 months prior to and following the California Medicaid expansions. California rolled out Medicaid expansion over 2011 and 2012, and we use the dates of expansion by county provided by Sommers, et al.[17] These dates are listed in Appendix Exhibit A2 along with county-specific average monthly payday borrowing prior to expansion.[16] Appendix Exhibit A3 shows the aggregate study sample statistics.[16] We examine outcomes in the 43 Medicaid-expansion counties in California, relying on 920 counties in non-expanding states and 4 California counties that delayed expansion to serve as a comparison group.

Our primary outcomes are three measures of loan volume: the total number of loans, the total amount of money borrowed, and the number of unique borrowers. We measure unique borrowers appearing in the data each month using the dataset's anonymized borrower

identifier. Medicaid expansions provide health insurance for uninsured adults under age 65, so we stratify our outcomes by age and focus on those under 65. Given previous research findings that Medicaid expansions disproportionately benefited those under age 50, we further examine the distribution of the number of loans among non-elderly adults by borrower age (18-34, 35-49, 50-64).

Additionally we might expect to see higher reductions in payday lending within counties with higher pre-expansion shares of low-income uninsured adults. We assess this by using the Census Bureau's Small Area Health Insurance Estimates (SAHIE) to categorize and compare counties with "high-share uninsured" to "low-share uninsured". Counties categorized as having high-share uninsured are those in the top tercile of share-uninsured under 138% of Federal Poverty Line as estimated in the 2010 SAHIE; counties categorized as having low share uninsured are in the bottom tercile.

Our secondary outcomes are the share of loans that end in default, the share of loans that are repaid late, and the share of loans that are rollovers. Rollovers are loans that are taken out at the same time a prior loan is due, allowing the borrower to extend the loan's duration without repaying principal, in exchange for paying a finance charge. We identify likely rollovers in the data as loans that began within two days of a previous due date for the same borrower and same lender[18].

For both our primary and secondary outcomes, we employ a standard, difference-in-differences analysis of county-by-month outcomes covering roughly 24 months prior and 24 months following the 2011–2012 California Medicaid expansions. This analysis compares 43 California early-expansion counties to 924 non-expansion counties in the national dataset (including the four non-expansion California counties), with standard errors clustered at the county level. We stratify our findings by the age of the borrower, focusing on those under age 65, who would have been most likely affected by Medicaid expansion. As a sensitivity test in Appendix Exhibit A7,[16] we examine over-65 borrowers and utilize a triple-differences approach at the county-by-month-by-age level.

To rule out systemic pre-existing time trends that could undermine our difference-in-difference approach, we estimate an "event study" regression of the effect of Medicaid expansion on total loans. This tests the validity of our assumption that payday borrowing between expansion and non-expansion counties would have had similar trends had none of the counties expanded Medicaid. The regression includes a fixed effect for every county, a fixed effect for every month, and indicators for 4 six-month periods before Medicaid expansion and 3 six-month periods after expansion, presented in Appendix Exhibit A8.[16]

Limitations

Although we find no evidence of such, we cannot rule out the possibility that state or county-level changes in the regulation or enforcement of payday loans or other industry changes might have occurred in California from 2010–2014. However, we test the appropriateness of our

approach in several ways. First, we stratify our models by those over and under age 65; individuals under 65 would be beneficiaries of Medicaid expansion while those over 65 would not, since they would be eligible for Medicare. Second, we examine changes by the share of uninsured individuals in a county prior to expansion. We would expect a greater reduction in payday lending in areas with higher rates of previously uninsured compared to areas with previously low rates of uninsured. Last, we conduct an "event study", described above, to assess any pre-existing time trends in payday lending. Our additional methodology provides reassuring evidence that our findings are attributable to Medicaid.

Study Results

The difference-in-difference methodology we rely on compares payday lending before and after California's early Medicaid expansion in the state's expansion counties versus non-expansion counties nationwide. In order to control for confounding factors that affect all counties at particular times (recessions, holidays, seasonality, et.), this approach uses non-expansion counties, both in California and around the nation, as a control group to pin down these time-varying factors.

Exhibit 1 presents estimates of the impact of Medicaid expansion on the overall volume of payday lending, our primary outcomes; the accompanying table is available as Appendix Exhibit A4[16]. The figure suggests large reductions in borrowing for those under age 65. We find that the number of loans taken out per month declines by 789 for expansion counties compared with non-expansion counties. Given a pre-expansion mean of 6,948 loans per month, that amounts

to an 11-percent drop in number of loans (p <.001). This reduction in loan volume translates to

a $172,000 decline in borrowing per month per county, from a mean of $1,644,000 ($p$ =.001), a

drop of 10 percent. Also for those under age 65, 277 fewer unique borrowers per county per

month took out loans in expansion counties compared to non-expansion counties - from a pre-

expansion mean of 3,603 (p=.002), representing an almost 8 percent decrease.

Exhibit 2 presents the effect of Medicaid expansion on number of loans in three age categories:

18–34, 35–49, and 50–64 year olds; the accompanying table is available in Appendix Exhibit

A5[16]. We find that the reduction in number of loans per month is entirely driven by those under

the age of 50, with a slight increase for those over age 50, though that increase is not

statistically significant at conventional levels. For expansion counties in California, relative to

the non-expansion counties in California and nationwide, 18–34-year-olds experienced a

monthly per county decline of 486 loans, compared to a pre-expansion mean of 2,268 (p>.01),

an implied reduction of 21%. For 35–49-year-olds, the post-expansion monthly decline per

county was 345, from a pre-expansion mean of 2,715 (p<.001), a reduction of almost 13%. This

observed relationship was consistent among number of unique borrowers and total dollars

loaned (not shown).

Exhibit 3 examines the impact of Medicaid expansion on the volume of payday lending by share

of low-income uninsured in 2010. We find that counties with the highest tercile of low-income

uninsured in 2010 (in the top 30% of counties with share of uninsured below 138 percent of the

Federal Poverty Line) showed greater numerical and percentage-wise declines in payday loan

volume when compared to counties in the lowest tercile of low-income uninsured. We observed these differences in the reduction of number of monthly loans per county [-1571 (-12%) vs. -362 (-9.7%], in the amount decline of monthly dollars loaned per county [-$344,000 (-11.1%) vs. -$76,000 (-8.7%)], and in the decreased number of monthly unique borrowers per county [-610 (-8.8%) vs. -125 (-6.4%)].

In Exhibit 4, we show the effect of Medicaid on the payment outcomes of payday loans that were taken out; the accompanying table is available as Appendix Exhibit A6[16]. Among post-expansion loans, we see a proportionally large increase of 0.5 percentage points in the share of defaults, from a low-rate pre-expansion mean of 3 percent ($p<.001$). There were marginally significant changes in the share of late payments and an increase observed in rollovers, which had a high pre-expansion mean of 50 percent of all loans and a post-expansion increase of almost 3 percentage points ($p<.001$).

It is important to recognize that the interpretation of Medicaid's effect is less straightforward for the secondary outcomes than the primary outcomes. Since we observe a decline in overall loan volume, Medicaid expansion could have changed the types of people who took out payday loans. We cannot distinguish the effect on the types of borrowers versus a direct effect of Medicaid in reducing default, late payment, or rollover rates across all borrower types.

Appendix Exhibit A7 presents the results of the over-age 65 sensitivity analyses.[16] We examine payday loan volume stratified for those over age-65 as well as a triple-difference analysis of

county-by-month-by-age (under/over 65) categories. We find small but statistically significant increases in payday volume among over-65 borrowers (Panel A). When we use the over-65 population as an additional, within-state control group, we recover triple-difference estimates that are roughly similar, though slightly larger in magnitude than the difference-in-difference estimates in Exhibit 1. To the extent that the effects on the over-65 population capture unobserved, latent trends in expansion counties, this suggests that our main estimates might be slight under-estimates of the true effects of Medicaid expansion on payday loan volume.

As mentioned above, the key assumption in the difference-in-difference framework on which we rely is that California's Medicaid-expansion counties would have evolved along trends parallel to those of non-expansion counties in the absence of the Medicaid expansion. That assumption would be violated, for instance, if California experienced a uniquely robust job-market recovery during the study period. That said, we are aware of no evidence that the job-market recovery in California was different from the recovery in other states in a way that would affect payday borrowing. But, more importantly, Appendix Exhibit A8 measures the time trends surrounding Medicaid expansion both before and after the expansion on total loans.[16] Reassuringly, the exhibit suggests no pre-existing time trends, validating the parallel-trends assumption that underlies our difference-in-difference approach. Specifically, we observe no pre-existing trend that could confound the estimated effect of Medicaid expansion. We therefore find no evidence that the parallel trends assumption is violated. In addition, the figure suggests a negative effect of the Medicaid expansions that began approximately 6

months after expansion, which seems credible given that medical needs and medical bills accumulate slowly.

Discussion

Medicaid expansion has improved access to quality health care, increased the utilization of outpatient and inpatient medical services[15,19], and improved the personal finances of low-income adults by reducing medical collections and improving credit scores[1]. This study adds to the existing evidence of the benefits of expansion by demonstrating that Medicaid decreased the utilization of payday loans in California.

Previous research demonstrating that Medicaid expansions led to substantive reductions in medical debt suggested that we might find a reduction in the need for payday borrowing following California's early expansion. Indeed, our primary results suggest a large decrease (11%) in the number of loans for those under age 65, especially among younger consumers (21% for those aged 18-34). We observed a slight increase in borrowing for those older than age 65, which we found surprising. We also found the reduction in payday borrowing to be concentrated among those under age 50, which is plausible given that half of the adult Medi-Cal expansion from 2012-2014 were new enrollees under age 40 and almost 80 percent were under age 55[20]. Previous research has also suggested that younger adults are the primary benefactors of Medicaid expansions[21].

We are unable to identify the precise mechanisms behind how and for whom Medicaid reduces

payday borrowing. To our knowledge, no data exists that directly links payday lending to

insurance status. However, we discuss some plausible channels below. First, we consider that a

relatively small share of California residents gained coverage, roughly 8 percent of the low-

income population[22], but the coverage gain may have been much larger for the subset of low-

income California residents likely to frequent payday lenders. Thus the observed magnitude of

loan volume declines could simply be driven by a large change in borrowing for county

residents who actually gained coverage. There is previous evidence that California's early

Medicaid expansions decreased out-of-pocket medical spending by 10 percentage points

among low-income adults.[22] On the other hand, Medicaid expansion may have also affected

many more individuals beyond those who gained coverage directly. Household members of

those who gained Medicaid coverage may have also decreased their payday borrowing.

Payday loans are of particular policy import because they are a controversial financial product,

entirely outlawed in many states and tightly regulated in several others. These loans would be

severely restricted by new rules proposed by the Consumer Financial Protection Bureau[23].

Proponents of payday lending have argued that payday loans are an important resource for

those with bad credit who would otherwise not have access to cash in dire circumstances or

who would accrue even higher fees through bank overdrafts or informal loans. On the other

hand, evidence has shown that at least some payday borrowing results from behavioral biases,

and some consumers would be better off avoiding these loans. Such behavioral biases may lead

consumers to make mistakes when budgeting, be over-optimistic about their ability to repay

loans in the future, or to focus on short-term financial needs rather than the long-term

consequences of high-interest borrowing[24,25]. Regardless of the merits of payday lending, a

decline in loan volume attributable to Medicaid is a positive policy outcome and supports

previous research on the spillover effects of Medicaid on financial health.

Reductions in medical expenditures should also theoretically make it easier to pay back payday

loans. Yet, the outlook of post-expansion borrowers in our study was more mixed. While there

was a slight reduction in the number of loans per borrower, we observed marginal increases in

late payments and statistically significant increases in the share of defaults and rollovers. There

are several potential mechanisms for this increase that warrant further study. One, the

substantial reduction in payday volume we observed could have a corresponding influence on

the composition of remaining borrowers or on the characteristics of their debts.

Specifically, those borrowing because of medical expenses may be socio-demographically

different than people who borrow for other reasons (for example, job loss). Second, a trending

loss of revenue in the industry could exert influence on the business model, leading to riskier

lending practices if stores detect a significant decline in loan volume.

Conclusion

For those under age 65, Medicaid expansion in California was associated with significant

declines in the average number of payday loans per month, the amount borrowed, and the

number of unique borrowers. This decline in payday borrowing did not appear to be due to a

pre-existing trend. It was concentrated in young adults, was not observed among those age 65

and older, and more pronounced in areas with higher share of pre-expansion uninsured,

consistent with Medicaid expansion being the cause for reductions in payday borrowing. These

findings add to the prior literature on the benefits of Medicaid in improving the financial health

of low-income Americans.

Endnotes

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EXHIBIT 1 (figure)

Caption: Exhibit 1. Effect of Early Medicaid Expansion on Monthly Loan Volume for Borrowers

Under Age 65

Source: Authors analysis of CFSA data.

Notes: This figure plots the results of difference-in-difference regressions of the outcomes given

for those under age 65. The sample consists of county-by-month observations for all counties in

the payday-loan data, N = 58,020. Dollars loaned is measured in thousands. The vertical bars

indicate 96-percent confidence intervals clustered on county. See Appendix Exhibit A4 for the

regression estimates. For panel A, the R^2 is 0.971 and the p-value associated with a test that the

Medicaid expansion had no effect is less than 0.001. For panel B, the R^2 is 0.969 and the p-value is 0.001. For panel C, the R^2 value is 0.981 and the p-value is 0.002.

EXHIBIT 2 (figure)

Caption: Exhibit 2. Effect of Early Medicaid Expansion by Age Dependent Variable: Number of loans for given age of borrower under 65.

Source: Authors analysis of CFSA data.

Notes: This figure plots the results of difference-in-difference regressions of the outcomes given for those under age 65. The sample consists of county-by-month observations for all counties in the payday-loan data, N = 58,020. Dollars loaned is measured in thousands. The vertical bars indicate 96-percent confidence intervals clustered on county. See Appendix Exhibit A5 for the regression estimates. For panel A, the R^2 is 0.951 and the p-value associated with a test that the Medicaid expansion had no effect is 0.001. For panel B, the R^2 is 0.969 and the p-value is less than 0.001. For panel C, the R^2 value is 0.976 and the p-value is 0.442.

Exhibit 3 (table)

Caption: Exhibit 3. Effect of Early Medicaid Expansion Stratified by Local Share-Uninsured for Borrowers Under Age 65.

Source: Authors analysis of CFSA data.

Notes: N = 58,020. Each column presents the results from one difference-in-difference regression of outcomes for those under age 65. Counties categorized as having high share-uninsured are those in the top tercile of share-uninsured under 138 percent of the Federal

Poverty line; counties categorized as having low share-uninsured are in the bottom tercile. The sample consists of county-by-month observations for all counties in the payday-loan data. Dollars loaned are in thousands. The standard errors in parentheses are clustered on county, associated p-values in brackets. County and year-month fixed effects not shown.

EXHIBIT 4 (figure)

Caption: Exhibit 4. Effect of Early Medicaid Expansion on Secondary Outcomes for Borrowers Under Age 65.

Source: Authors analysis of CFSA data.

Notes: This figure plots the results of difference-in-difference regressions of the given outcomes. The sample consists of county-by-month observations for all counties in the payday-loan data, N = 58,020. Dollars loaned is measured in thousands. The vertical bars indicate 95-percent confidence intervals clustered on county. See Appendix Exhibit A6 for the regression estimates. For panel A, the R^2 is 0.451 and the p-value associated with a test that the Medicaid expansion had no effect is less than 0.001. For panel B, the R^2 is 0.686 and the p-value is 0.060. For panel C, the R^2 is 0.853 and the p-value is less than 0.001.

Exhibit 3. Effect of Early Medicaid Expansion Stratified by Local Share-Uninsured for Borrowers Under Age 65

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable:	Number of loans		Dollars loaned		Unique borrowers	
Share uninsured	High	Low	High	Low	High	Low
Medicaid-expansion county, post expansion	- 1571.388 (624.484) [0.012]	- 361.913 (122.526) [0.003]	- 343.598 (149.714) [0.022]	- 76.138 (28.030) [0.007]	- 610.133 (264.786) [0.022]	- 125.309 (40.294) [0.002]
Pre-expansion mean	13,066.7	3,720.6	3,098.8	875.3	6,896.8	1,949.3
Implied percentage change	-12.0%	-9.7%	-11.1%	-8.7%	-8.8%	-6.4%
R^2	0.971	0.976	0.966	0.977	0.982	0.980
N	19,740	19,140	19,740	19,140	19,740	19,140

N = 58,020. Each column presents the results from one difference-in-difference regression of outcomes for those under age 65. Counties categorized as having high share-uninsured are those in the top tercile of share-uninsured under 138 percent of the Federal Poverty line; counties categorized as having low share-uninsured are in the bottom tercile. The sample consists of county-by-month observations for all counties in the payday-loan data. Dollars loaned are in thousands. The standard errors in parentheses are clustered on county, associated p-values in brackets. County and year-month fixed effects not shown.

Exhibit 1. The Effect of Early Medicaid Expansion on Monthly Loan Volume
for Borrowers Under Age 65
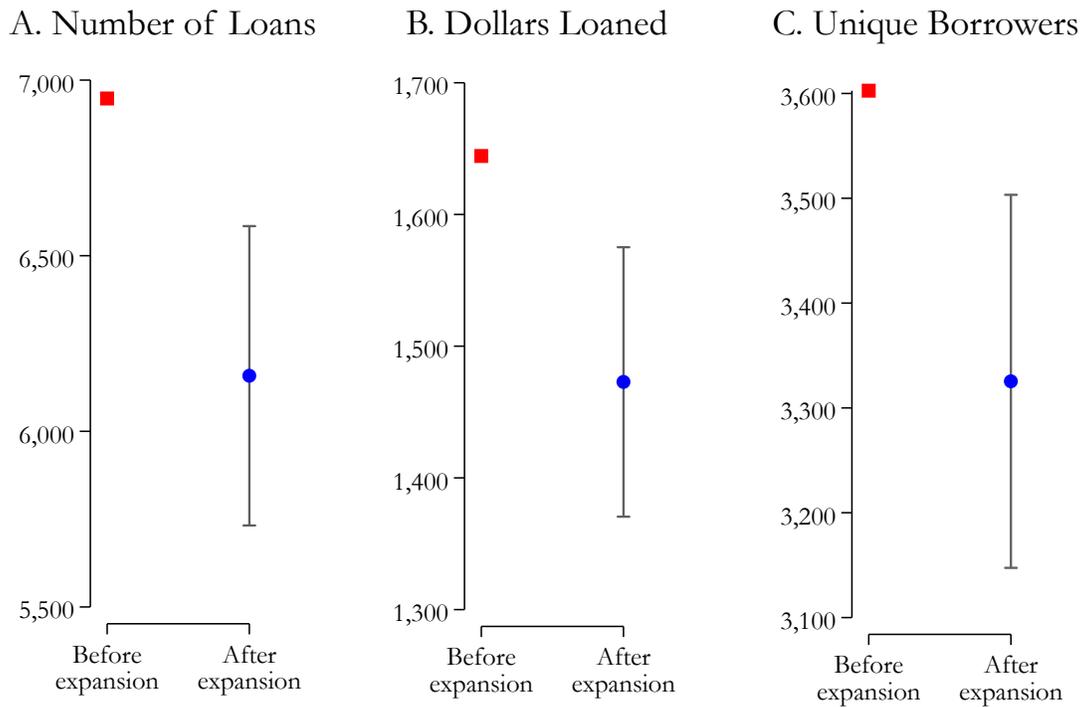
A. Number of Loans

B. Dollars Loaned

C. Unique Borrowers

This figure plots the results of difference-in-difference regressions of the outcomes
given for those under age 65. The sample consists of county-by-month observations for
all counties in the payday-loan data, $N = 58,020$. Dollars loaned is measured in
thousands. The vertical bars indicate 95-percent confidence intervals clustered on county.
See Appendix Exhibit A4 for the regression estimates. For panel A, the R^2 is 0.971 and
the p-value associated with a test that the Medicaid expansion had no effect is less than
0.001. For panel B, the R^2 is 0.969 and the p-value is 0.001. For panel C, the R^2 value is
0.981 and the p-value is 0.002.

Exhibit 2. The Effect of Early Medicaid Expansion by Age
Dependent Variable: Number of loans for given age of borrower
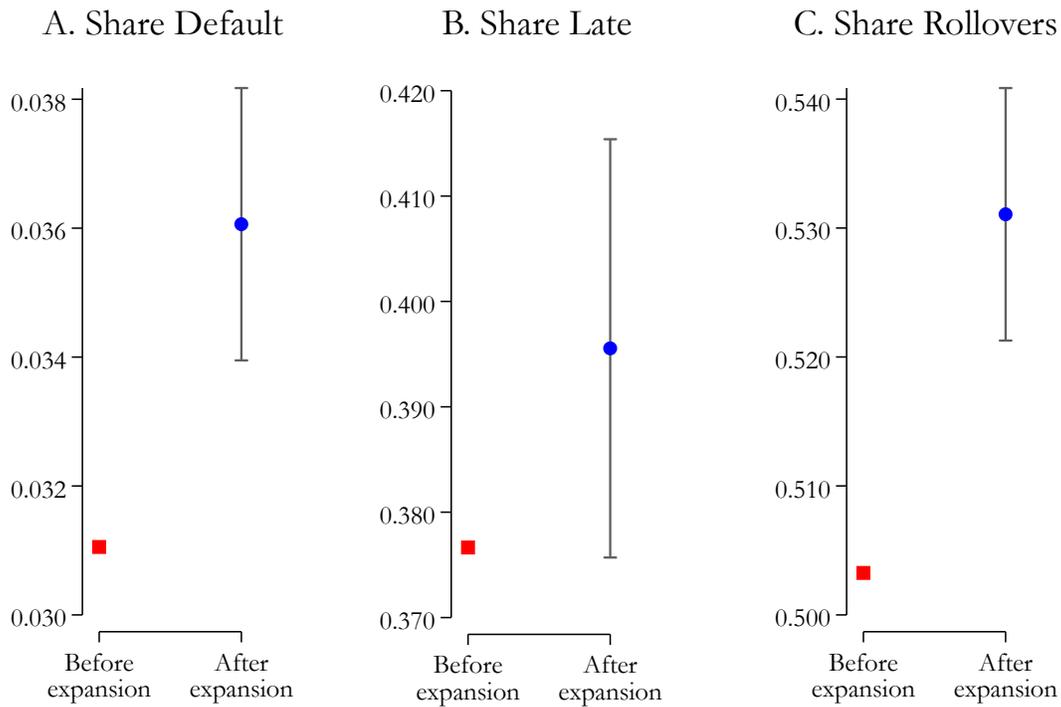
| A. Ages 18–34 | B. Ages 35–49 | C. Ages 50–64 |
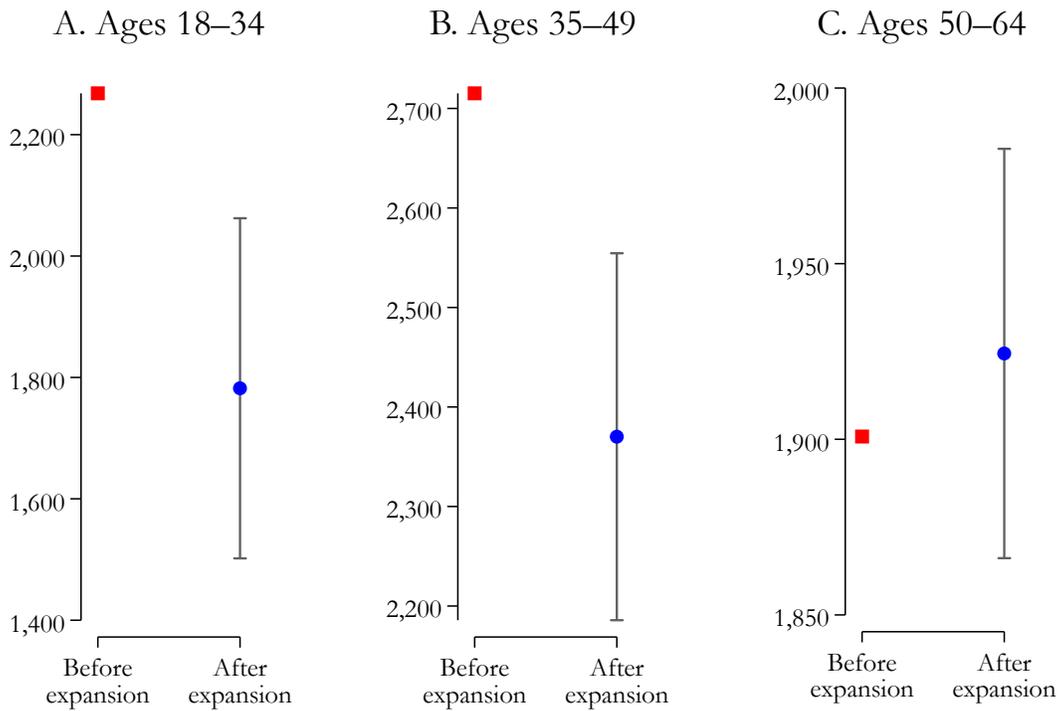
This figure plots the results of difference-in-difference regressions of number of loans for the given age groups. The sample consists of county-by-month observations for all counties in the payday-loan data, $N = 58,020$. Dollars loaned is measured in thousands. The vertical bars indicate 95-percent confidence intervals clustered on county. See Appendix Exhibit A5 for the regression estimates. For panel A, the R^2 is 0.951 and the p-value associated with a test that the Medicaid expansion had no effect is 0.001. For panel B, the R^2 is 0.969 and the p-value is less than 0.001. For panel C, the R^2 value is 0.976 and the p-value is 0.442.

Exhibit 4. The Effect of Early Medicaid on Secondary Outcomes For Borrowers Under Age 65

A. Share Default   B. Share Late   C. Share Rollovers

This figure plots the results of difference-in-difference regressions of the given outcomes. The sample consists of county-by-month observations for all counties in the payday-loan data, $N = 58,020$. Dollars loaned is measured in thousands. The vertical bars indicate 95-percent confidence intervals clustered on county. See Appendix Exhibit A6 for the regression estimates. For panel A, the R^2 is 0.451 and the p-value associated with a test that the Medicaid expansion had no effect is less than 0.001. For panel B, the R^2 is 0.686 and the p-value is 0.060. For panel C, the R^2 is 0.853 and the p-value is less than 0.001.

Figure 1. States Covered in Payday-Loan Data

Number of loans
in thousands

- $4,225 - 24,429$
- $2,721 - 4,225$
- $902 - 2,721$
- $490 - 902$
- $231 - 490$
- $0 - 231$
- No data

Note: States with no data do not appear in the dataset because these firms do not operate storefronts in those states. This may be due to state regulations or simply the firms' business decisions.

Appendix Exhibit A2. List of California Counties in the Data

County	Date of Expansion	Average number of loans per month	County	Date of Expansion	Average number of loans per month
Alameda	2011/7	11,944.1	El Dorado	2012/1	691.5
Contra Costa	2011/7	13,719.1	Glenn	2012/1	N/A
Kern	2011/7	12,608.3	Humboldt	2012/1	1,280.1
Los Angeles	2011/7	54,572.4	Imperial	2012/1	2,664.8
Merced	2013/1	5,007.2	Inyo	2012/1	N/A
Monterey	2012/10	3,974.3	Kings	2012/1	3,545.0
Orange	2011/7	15,229.6	Lake	2012/1	882.5
Placer	2012/8	1,650.0	Lassen	2012/1	884.2
Riverside	2012/10	25,586.7	Madera	2012/1	2,056.5
Sacramento	2012/10	21,819.9	Marin	2012/1	N/A
San Bernardino	2012/10	26,264.1	Mariposa	2012/1	N/A
San Diego	2011/7	14,795.5	Mendocino	2012/1	1,178.0
San Francisco	2011/7	1,306.7	Modoc	2012/1	N/A
San Joaquin	2012/6	8,965.9	Mono	2012/1	N/A
San Mateo	2011/7	4,117.0	Napa	2012/1	448.5
Santa Clara	2011/7	11,954.7	Nevada	2012/1	571.1
Santa Cruz	2012/1	1,649.1	Plumas	2012/1	N/A
Tulare	2013/1	7,808.6	San Benito	2012/1	744.7
Ventura	2011/7	5,765.9	Shasta	2012/1	4,558.6
Fresno	Did not expand	14,818.0	Sierra	2012/1	N/A
San Luis Obispo	Did not expand	4,651.7	Siskiyou	2012/1	512.3
Santa Barbara	Did not expand	4,864.1	Solano	2012/1	9,898.4
Stanislaus	Did not expand	8,264.3	Sonoma	2012/1	3,346.8
Alpine	2012/1	N/A	Sutter	2012/1	1,329.5
Amador	2012/1	609.5	Tehama	2012/1	1,459.7
Butte	2012/1	3,967.2	Trinity	2012/1	N/A
Calaveras	2012/1	N/A	Tuolumne	2012/1	615.4
Colusa	2012/1	144.8	Yolo	2012/1	1,664.6
Del Norte	2012/1	865.3	Yuba	2012/1	549.2

Counties with no storefront payday loans are not in the data ($N = 11$).

Appendix Exhibit A3. Sample Statistics		
	Medicaid-expansion counties	Other counties
Number of counties	43	924
Number of payday loans	17,592,435	59,148,719
Mean annual income in thousands	$58.20	$63.57
Mean age	44.4	44.8
Total amount loaned in thousands	$4,168,162	$22,471,266

Appendix Exhibit A4. Effect of Early Medicaid Expansion on Monthly Loan Volume
for Borrowers Under Age 65

	(1)	(2)	(3)
Dependent Variable	Number of loans	Dollars loaned	Unique borrowers
Medicaid-expansion county, post expansion	- 789.416 (215.206) [0.000]	- 171.524 (51.671) [0.001]	- 277.282 (89.868) [0.002]
Pre-expansion mean	6,947.6	1,644.4	3,602.6
Implied percentage change	-11.4%	-10.4%	-7.7%
R^2	0.971	0.969	0.981

$N = 58{,}020$. Each column presents the results from one difference-in-difference regression of outcomes given for those under age 65. The sample consists of county-by-month observations for all counties in the payday-loan data. Dollars loaned is measured in thousands. The standard errors in parentheses are clustered on county, associated p-values in brackets. County and year-month fixed effects not shown.

Appendix Exhibit A5. Effect of Early Medicaid Expansion by Age
Dependent Variable: Number of loans for given age of borrower

	(1)	(2)	(3)
Age of borrower	18–34	35–49	50–64
Medicaid-expansion county, post expansion	- 485.969	- 345.085	23.650
	(141.521)	(93.123)	(29.429)
	[0.001]	[0.000]	[0.422]
Pre-expansion mean	2,268.1	2,715.2	1,900.8
Implied percentage change	-21.4%	-12.7%	1.2%
R^2	0.951	0.969	0.976

N = 58,020. Each column presents the results from one difference-in-difference regression of outcomes for the given age groups. The sample consists of county-by-month observations for all counties in the payday-loan data. Dollars loaned is measured in thousands. The standard errors in parentheses are clustered on county, associated p-values in brackets. County and year-month fixed effects not shown.

Appendix Exhibit A6. Effect of Early Medicaid Expansion on Secondary Outcomes for Borrowers Under Age 65

|	(1)	(2)	(3)
Dependent Variable	Share default	Share late	Share rollovers
Medicaid-expansion county, post expansion	0.005	0.019	0.028
	(0.001)	(0.010)	(0.005)
	[0.000]	[0.060]	[0.000]
Pre-expansion mean	0.031	0.377	0.503
R^2	0.451	0.686	0.853

N = 58,020. Each column presents the results from one difference-in-difference regression of outcomes given for those under age 65. The sample consists of county-by-month observations for all counties in the payday-loan data. Dollars loaned is measured in thousands. The standard errors in parentheses are clustered on county, associated p-values in brackets. County and year-month fixed effects not shown.

Appendix Exhibit A7. Effect of Early Medicaid Expansion on Main Outcomes For Over-65 Population

Dependent Variable	(1) Number of loans	(2) Dollars loaned	(3) Unique borrowers
	Panel A. Effect Among Over-65 Borrowers		
Medicaid-expansion county, post expansion	93.550 (28.311) [0.001]	19.216 (6.906) [0.006]	60.181 (18.055) [0.001]
Pre-expansion mean	407.4	97.6	262.9
R^2	0.958	0.950	0.966
	Panel B. Triple-Difference Specification		
Medicaid-expansion county, post expansion, under age 65	- 835.505 (224.000) [0.000]	- 180.947 (53.809) [0.001]	- 318.639 (98.311) [0.001]
Pre-expansion mean	705.8	245.4	420.3
R^2	0.987	0.987	0.991

For panel A, $N = 58,020$; for panel B, $N = 116,040$. Each column presents the results from one difference-in-difference regression. For panel A, see notes to previous tables. For panel B, the sample consists of county-by-month-by-age-category observations for all counties in the payday-loan data. The standard errors in parentheses are clustered on county, associated p-values in brackets. County, age category, and year-month fixed effects not shown. Dollars loaned is measured in thousands.

Appendix Exhibit A8. The Effect of Medicaid-Expansion on Total Loan Volume
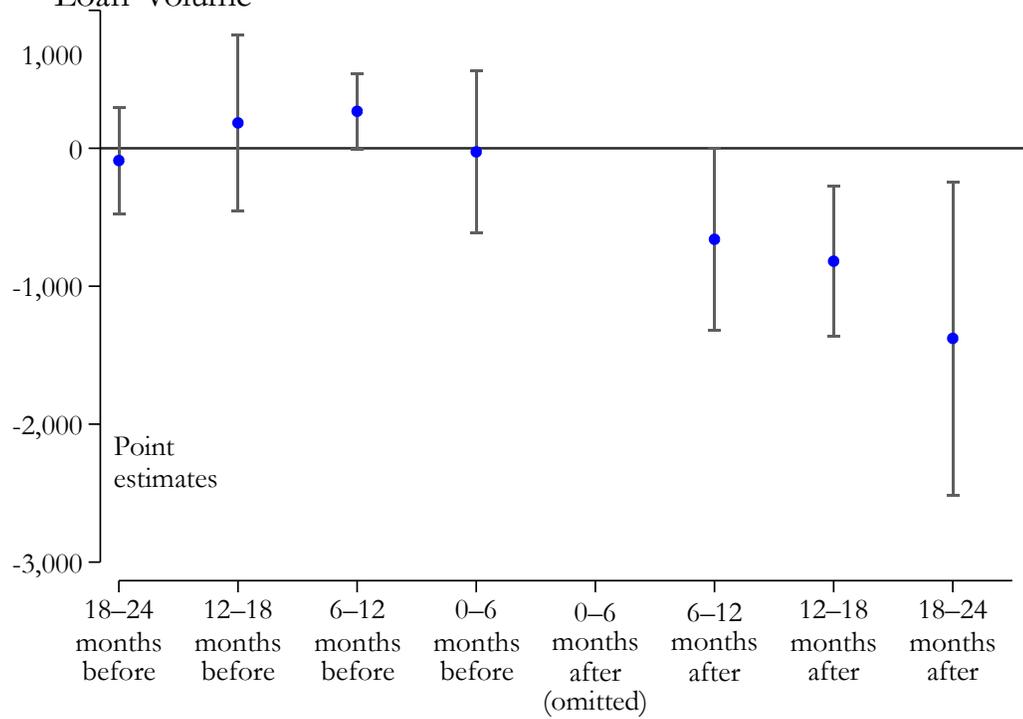
This figure plots the results of an "event study" regression of total loan volume for those under age 65 on months before and after a county expands Medicaid. The vertical bars indicate 95-percent confidence intervals.