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## State Variation of Student Loan Debt and Performance

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### ABSTRACT

National student loan debt has continued to climb, trending up despite the decline of other types of consumer debt since the Great Recession. This Article provides an overview of the student loan market and the distribution of individual loan balances and loan performance. The empirical analysis uses a state and time fixed-effect model to examine factors that influence the variation across states in the amount borrowed and delinquencies measured in terms of balance or number of borrowers. The results show that states with higher student loan balances are not necessarily those with poorer loan performance. There are no clear patterns of amount borrowed, but loan performance does differ among races and ethnicities. States with a higher percentage of their population with a college degree borrow less and have better loan performance. States with higher than average credit scores tend to have lower than average rates of delinquency. Credit scores are not necessarily related to the amount borrowed because the majority of student loans are federal and are not underwritten based on borrowers' credit risks. Controlling for time fixed effects masks the influence of state median income, unemployment, tuition and fees, and state support for higher education on average loan balance or loan performance. State financial aid only affects amount borrowed but not loan performance. Patterns of college enrollment by state have a very small impact on student loan balance or loan performance. Because information at the level of the individual borrower is limited, this analysis, which instead uses state-level data, can help shed light on consumer decisions to take out and repay student loans, and it may also help determine how to allocate resources at both the state level and national level.

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## I. INTRODUCTION

While the overall indebtedness of American households has fallen from its peak during the recent recession, student loan debt has been increasing at a rapid pace—climbing from about \$346 billion in the fourth quarter of 2004 to \$1.12 trillion in the second quarter of 2014.<sup>1</sup>

Along with this large accumulation of debt, delinquency and default rates are worrisome. Although recent data suggest that student loan delinquency rates have begun to stabilize, more than 10% of student loans are ninety or more days past due, which exceeds the past due rates of mortgages and credit cards.<sup>2</sup> Furthermore, when only loans in repayment are considered, student loan delinquency rates are significantly higher than those of other major forms of consumer debt.<sup>3</sup>

The financial burden on borrowers of repaying student loans can impact not only borrowers but also the broader economy.<sup>4</sup> The financial market is less likely to be affected by rising student loan debt and delinquencies than it was by the recent mortgage crisis—as the student loan market has limited exposure to the markets and only a small percentage of student loans are securitized and sold to investors. Borrowers with excessive monthly payments, however, may decide to postpone home purchases,<sup>5</sup> delay formation of families<sup>6</sup> and small businesses,<sup>7</sup> and save less for retirement.<sup>8</sup> Loan defaults damage borrowers'

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1. See FED. RESERVE BANK OF N.Y., QUARTERLY REPORT ON HOUSEHOLD DEBT AND CREDIT (2014), available at [http://www.newyorkfed.org/householdcredit/2014-q2/data/pdf/HHDC\\_2014Q2.pdf](http://www.newyorkfed.org/householdcredit/2014-q2/data/pdf/HHDC_2014Q2.pdf), archived at <http://perma.cc/LRU7-XVKP> [hereinafter QUARTERLY REPORT ON HOUSEHOLD DEBT]; Wenhua Di & Emily Ryder Perlmeter, *Student Loans Part 1: Get the Numbers Right*, PERSPECTIVES: DALL. FED. COMMUNITY DEV. (Dec. 2014), <http://www.dallasfed.org/microsites/cd/perspectives/articles/2014/1202.html>, archived at <http://perma.cc/4ENF-KVPW>.

2. See QUARTERLY REPORT ON HOUSEHOLD DEBT, *supra* note 1.

3. See *Student Loan Debt by Age Group*, FED. RES. BANK N.Y. (Mar. 29, 2013), <http://www.newyorkfed.org/studentloandebt/>, archived at <http://perma.cc/GR5T-NPEY>.

4. See generally SANDY BAUM ET AL., COLL. BD., EDUCATION PAYS 2010: THE BENEFITS OF HIGHER EDUCATION FOR INDIVIDUALS AND SOCIETY (2010), available at <https://trends.collegeboard.org/sites/default/files/education-pays-2010-full-report.pdf>, archived at <https://perma.cc/Z2QD-UN3T>; AM. STUDENT ASSISTANCE, LIFE DELAYED: THE IMPACT OF STUDENT DEBT ON THE DAILY LIVES OF YOUNG AMERICANS (2013), available at <http://www.asa.org/for-partners/schools/content-pages/life-delayed-the-impact-of-student-debt-on-the-daily-lives-of-young-americans/>, archived at <http://perma.cc/LKT3-DTFV> [hereinafter LIFE DELAYED].

5. See Meta Brown et al., *Does Rising Student Debt Affect the Home Purchases of Young Borrowers?*, UPJOHN INST. (Oct. 26, 2013), <http://www.upjohn.org/stuloanconf/student%20loan%20frbny%20-%20upjohn.pdf>, archived at <http://perma.cc/5MFK-AZEG>; see also Meta Brown & Sydnee Caldwell, *Young Student Loan Borrowers Retreat from Housing and Auto Markets*, FED. RES. BANK N.Y. (Apr. 17, 2013), <http://libertystreeteconomics.newyorkfed.org/2013/04/young-student-loan-borrowers-retreat-from-housing-and-auto-markets.html>, archived at <http://perma.cc/6AUC-N3RP>.

6. See Dora Gicheva, *Does the Student-Loan Burden Weigh into the Decision To Start a Family?*, U.N.C. AT GREENSBORO (Mar. 2011), [http://www.uncg.edu/bae/people/gicheva/Student\\_loans\\_marriage\\_March11.pdf](http://www.uncg.edu/bae/people/gicheva/Student_loans_marriage_March11.pdf), archived at <http://perma.cc/N6PT-8WXD>.

7. See Brent W. Ambrose et al., *The Impact of Student Loan Debt on Small Business Formation*, SOC. SCI. RES. NETWORK (Mar. 31, 2014), <http://dx.doi.org/10.2139/ssrn.2417676>, archived at <http://perma.cc/>

credit, which reduces future access to credit (including the ability to receive additional student loans). In addition, consumption and investment by those indebted with student loans may be reduced, which can impact economic growth and the labor market for future college graduates.

Most discussions about student loans have centered on national trends, but student loan debt and performance vary widely among borrowers and across geographic lines. In this Article, we focus on the geographic variation of student loan debt and delinquency rates. The purpose of this analysis is twofold. First, a state-level analysis may shed light on consumers' decisions to take out student loans and how to repay them. While there is limited information available at the level of the individual borrower, looking instead at state-level data may reflect the circumstances individuals face. Second, an understanding of how state-level support for higher education influences student loan borrowing and performance may inform student loan disbursement and repayment policies, as well as other higher education policy decisions.

We begin with an overview of the student loan market in the national context and present the variation across states in student loan debt and performance. We then report the results of the empirical analyses of potential factors associated with state-level variation in student loan debt and performance. Additionally, we discuss policy implications and the need for additional data and future research.

## II. STUDENT FINANCIAL AID AND THE LOAN MARKET

As the cost of higher education continues to rise, most families are unable to finance these expenditures with their own resources and must turn to various forms of financial aid to fill the gap. The most utilized type of financial aid is the student loan—and in particular, federal student loans. During the 2012-13 academic year, federal student loans accounted for the largest share of student aid for higher education.<sup>9</sup> The budget for student loans requested by the U.S. Department of Education reached 74% of total federal aid for higher education for the fiscal year of 2013.<sup>10</sup> During the 2011-12 academic year, about 50% of students who enrolled in four-year public colleges and universities received student loans.<sup>11</sup> Additionally, 77% of students enrolled in private nonprofit

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8. See generally LIFE DELAYED, *supra* note 4.

9. See *infra* Table 1.

10. See *FY 2013 Department of Education Justifications of Appropriation Estimates to the Congress: Volume II*, U.S. DEP'T EDUC., <http://www2.ed.gov/about/overview/budget/budget13/justifications/index.html> (last updated Feb. 13, 2012), archived at <http://perma.cc/A9TR-AB3T>.

11. See Table 331.90. *Percentage of Full-Time and Part-Time Undergraduates Receiving Federal Aid, by Aid Program and Control and Level of Institution: 2007-08 and 2011-12*, NAT'L CENTER FOR EDUC. STAT., [http://nces.ed.gov/programs/digest/d13/tables/dt13\\_331.90.asp](http://nces.ed.gov/programs/digest/d13/tables/dt13_331.90.asp) (last visited May 18, 2015), archived at <http://perma.cc/R4QN-NW5M>.

institutions received student loans, and 84% of students at for-profit institutions received student loans.<sup>12</sup>

“The market for student loans is complex” and contains many “institutions, products, and relationships.”<sup>13</sup> Federal loans are provided for under Title IV of the Higher Education Act.<sup>14</sup> Non-federal loans are offered by the private sector (depository and non-depository financial institutions) or nonprofit lenders (state- and institution-sponsored).<sup>15</sup>

The student loan market has undergone substantial reform since the recent recession, such that the federal government’s role and programs have changed. For instance, the Federal Family Education Loan (FFEL) program, which provided guarantees (insurance) and, in many cases, borrower subsidies, for qualified privately-issued student loans, was replaced by the William D. Ford Federal Direct Loan Program (FDLP), under which the federal government provides student loans directly to borrowers.<sup>16</sup> The primary impetus for the change was an analysis from the George H.W. Bush administration, which suggested that direct loans would be less costly and administratively simpler than guaranteed loans.<sup>17</sup> Nonetheless, loan terms under the FDLP are similar to terms under the FEEL program. Federal student loans offer several advantages over other student loan programs.<sup>18</sup> These advantages include the potential for subsidization while in school, initial deferment upon leaving school, typically lower interest rates, more programs for borrower relief, and additional loan rehabilitation programs. “Subsidized student loans from revolving loan funds controlled by educational institutions continue to be available.”<sup>19</sup> Private loans also continue to be available to students but are not guaranteed, administered,

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12. *See id.* This includes only loans made directly to students and does not include Parent Loans for Undergraduate Students (PLUS) and other loans made directly to parents.

13. Kelly D. Edmiston et al., *Student Loans: Overview and Issues (Update)* 3 (Fed. Reserve Bank of Kan. City, Working Paper No. RWP 12-05, 2013), available at <http://www.kansascityfed.org/publicat/reswkpap/pdf/rwp%2012-05.pdf>, archived at <http://perma.cc/X4F4-7V2J>.

14. Federal student loans are largely made up of “Perkins loans” and “Stafford loans.” Perkins loans and almost half of all Stafford loans are termed “subsidized,” indicating that borrowers are not charged interest while in school or in certain other periods. Subsidized loans are awarded based on the student’s financial need as determined through a uniform application for college aid, the Free Application for Federal Student Aid, or FAFSA. Annual and aggregate borrowing limits are set based on the student’s dependency status and year in school. The interest rate and terms are the same for all borrowers within individual programs. Another federal loan program, “PLUS loans,” are made to parents of undergraduates and graduate and professional students who have reached the borrowing limits for Stafford loans. While these loans require that the borrower has no adverse credit history, pricing and terms are the same for all borrowers. Loans can be made up to the full cost of attendance with no overall aggregate borrowing limit less all other financial assistance.

15. Edmiston et al., *supra* note 13, at 4.

16. *Id.* at 5-6.

17. *Federal Student Loan Programs—History*, ATLAS: NEW AM. (Mar. 28, 2012), <http://febp.newamerica.net/background-analysis/federal-student-loan-programs-history>, archived at <http://perma.cc/DDM3-GVPL> (this article was updated on July 7, 2015 and now appears as *History of Federal Student Loan Programs*).

18. *Federal Versus Private Loans*, U.S. DEP’T EDUC., <https://studentaid.ed.gov/types/loans/federal-vs-private> (last visited May 18, 2015), archived at <https://perma.cc/C7JQ-N2AM>.

19. Edmiston et al., *supra* note 13, at 6.

or subsidized by the federal government.<sup>20</sup> Non-federal loan-disbursements were \$10 billion in the 2013-14 academic year, of which 83% were issued by private sector institutions, such as commercial banks.<sup>21</sup> Non-federal loans accounted for 9.5% of all student loan disbursements.<sup>22</sup>

### III. MEASURES OF STUDENT LOAN DEBT AND DELINQUENCIES

Many Americans are concerned that student debt burdens, payments, and high delinquency rates may lead to a student loan “crisis.” The increase in aggregate debt is not only the result of increased amounts of borrowing but also is the result of an increase in the number of borrowers.<sup>23</sup>

#### A. Individual Student Loan Debt and Financial Burden To Repay

Mounting student loan debt has been driven in significant part by the growth in enrollment in post-secondary education, which has increased by 3.3 million students, or 27%, in the decade ending in 2012.<sup>24</sup> Average debt has also increased significantly, growing at a compound annual rate of about 5.9% in nominal dollars from 2004 to 2014.<sup>25</sup> By contrast, general prices rose only 1.9% over that period.<sup>26</sup>

We use the data from the Federal Reserve Bank of New York Consumer

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20. *Id.*

21. Authors' calculation were made using data underlying figures available through the College Board. See COLL. BD., TRENDS IN STUDENT AID 2013, at 17 fig.6 (2013), available at <http://trends.collegeboard.org/sites/default/files/student-aid-2013-full-report.pdf>, archived at <http://perma.cc/4W4V-75KY>; see also Table 2. *Student Aid and Nonfederal Loans in Current Dollars (in Millions), 1970-71 to 2013-14*, COLL. BD., <http://trends.collegeboard.org/sites/default/files/2014-trends-student-aid-source-data-final-web.xls>, archived at <http://perma.cc/U5WR-TEUV>.

22. See Table 2. *Student Aid and Nonfederal Loans in Current Dollars (in Millions), 1970-71 to 2013-14*, supra note 21.

23. See Cooper Howes, *Student Loans: The Dark Side of “Good” Debt*, BARCLAYS (July 11, 2012); see also *Student Loan Debt: How Big a Problem*, GOLDMAN SACHS (May 23, 2014), <https://360.gs.com/research/portal/research/econcommentary/?action=viewpage&st=1&d=17215026&isRouted=true> (available only with login).

24. Authors' calculations were made using data from the National Center for Education Statistics. See Table 303.10. *Total Fall Enrollment in Degree-Granting Postsecondary Institutions, by Attendance Status, Sex of Student, and Control of Institution: Selected Years, 1947 Through 2023*, NAT'L CENTER FOR EDUC. STAT., [https://nces.ed.gov/programs/digest/d13/tables/dt13\\_303.10.asp](https://nces.ed.gov/programs/digest/d13/tables/dt13_303.10.asp) (last visited May 18, 2015), archived at <http://perma.cc/6AKZ-UYWN>. The latest available data are from 2012, and data beyond 2012 are projected. *Id.*

25. Authors' calculations were made using data from the Federal Reserve Bank of New York Consumer Credit Panel/Equifax. The data are derived from a 5% sample of individual Equifax credit reports. The credit reports are “sanitized” to eliminate information that would potentially allow users to identify individual consumers in the data. See *FRBNY Consumer Credit Panel/Equifax*, FED. RES. BANK N.Y., <http://www.newyorkfed.org/microeconomics/ccp.html> (last visited May 19, 2015), archived at <http://perma.cc/EX6J-GWFZ>.

26. Authors' calculations were made using the Personal Consumption Expenditures Chain-Type Price Index from the Department of Commerce, Bureau of Economic Analysis. See Table 2.3.4U *Price Indexes for Personal Consumption Expenditures by Major Type of Product and by Major Function*, U.S. DEP'T OF COM., <http://www.bea.gov/iTable/iTable.cfm?reqid=12&step=3&isuri=1&1203=75#reqid=12&step=3&isuri=1&1203=13> (last visited May 18, 2015), archived at <http://perma.cc/KB7X-DVWW>.

Credit Panel/Equifax to analyze the distribution of student loan debt.<sup>27</sup> The median student loan borrower in the second quarter of 2014 owed \$14,025 in student loan debt. About 25% of borrowers held more than \$31,419 in student loan debt in the second quarter of 2014, while another 25% held less than \$5,753 in student loan debt. The average amount of student loan debt was \$26,040 per borrower. The difference between the average and the median reflects the existence of borrowers at the top of the distribution with especially large amounts of student loan debt. About 4.1% of borrowers have six-figure student loan debt, while 0.8% of borrowers carry debt over \$200,000. In most cases, particularly high levels of debt were accrued by graduate students.<sup>28</sup> In fiscal year 2014, undergraduate borrowing through the direct loan program was capped at \$57,500 (a maximum of \$23,000 subsidized and a maximum of \$31,000 for dependent students), while graduate students could borrow as much as \$138,500 (a maximum of \$65,500 subsidized).<sup>29</sup> Graduate student loans are inclusive of any undergraduate student loan debt. Graduate students also may borrow up to the cost of attendance, less all other financial assistance, through the PLUS loan program.<sup>30</sup>

The average age of consumers with student loan debt is thirty-five-years-old, almost twenty years younger than consumers without student loan debt. About 42% of consumers with student loan debt are under thirty-years-old and 28% are over forty-years-old. About 36% of those with student loan debt in the second quarter of 2014 had prime credit scores (680 and above), as measured by the Equifax Risk Score, while 20% had near prime scores (between 620 and 679), and 44% were subprime (less than 620).<sup>31</sup> The average credit score was 626.

In the second quarter of 2014, the median minimum monthly payment on student loan debt was \$171 while the mean was \$472. For 25% of borrowers,

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27. See *supra* note 25 (explaining authors' calculations).

28. Jason Delisle, *The Graduate Student Debt Review: The State of Graduate Student Borrowing*, NEW AM. (Mar. 2014), <http://www.newamerica.org/downloads/GradStudentDebtReview-Delisle-Final.pdf>, archived at <http://perma.cc/6ZMB-N8YX>.

29. *Applying for Direct Loans*, U.S. DEP'T EDUC., <http://www.direct.ed.gov/applying.html> (last updated May 14, 2015), archived at <http://perma.cc/9ZU5-4RYN>. Independent undergraduate students may borrow an additional \$26,500 in unsubsidized funds and medical students may borrow up to \$224,000 in total federal loans. *Federal Student Loans*, ASS'N AM. MED. COLL., [https://www.aamc.org/advocacy/meded/79232/federal\\_student\\_loans.html](https://www.aamc.org/advocacy/meded/79232/federal_student_loans.html) (last visited May 18, 2015), archived at <https://perma.cc/35Y3-J5ET>.

30. *Applying for Direct Loans*, *supra* note 29. PLUS is an acronym for Parent Loan for Undergraduate Students. These loans require good credit, broadly defined, and may require a cosigner. Graduate students who have exhausted their limits for Stafford loans may also apply for direct loans through the PLUS program.

31. See *supra* note 26 (explaining authors' calculations). The "credit score" reported here is the Equifax Risk Score, which can be interpreted like the more familiar FICO score. Equifax Risk Score 3.0 was developed by credit scoring agency Equifax, Inc. and predicts the likelihood of a consumer becoming seriously delinquent (90+ days past due). The score ranges from 300 to 850 (the lower the score, the greater the delinquency risk). The terms "prime," "near prime," and "subprime" reflect a classification often used to assign credit risk premiums to the nominal interest rate on loans.

the minimum payment exceeded \$353 per month. Another 25% had minimum required payments of less than \$75. When compared to monthly before-tax earnings from work for recent students with student loan debt, estimated to be around \$2,500, the payments are clearly a financial burden to some borrowers.<sup>32</sup> When payments are an insurmountable burden, more and more borrowers are unable to make timely repayments, and delinquency rates climb.

### B. Student Loan Delinquency and Default

It is common for borrowers to take out multiple student loans. If these loans are not consolidated, they may have different terms, balances, and delinquency statuses. Student loan performance can be based on delinquent balances, number of delinquent loans, or number of delinquent borrowers. Typically, if a borrower does not make a payment on a federal student loan within 270 days or make arrangements with the lender, then the student loan is in default.<sup>33</sup> The default status of a private student loan, however, varies based on the lender. Loans reported more than ninety days past due or severe derogatory are

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32. See David J. Deming et al., *The For-Profit Postsecondary School Sector: Nimble Critters or Agile Predators?*, 26 J. ECON. PERSP., no. 1, 2012, at 139, 139-64, available at <http://pubs.aeaweb.org/doi/pdfplus/10.1257/jep.26.1.139>. The cited number was grossed up by the rate of growth in earnings between the first quarters of 2009 and 2012, as reported by the U.S. Bureau of Economic Analysis, and then converted to a monthly figure. *Id.* See also Amy Traub et al., *The Contract for College*, DEMOS 2 (Sept. 4, 2012), <http://www.demos.org/publication/contract-college>, archived at <http://perma.cc/SH7Q-P7Y5> (“The student loan burden is taking a toll on young adults’ lives: almost 1 in 5 significantly changed their career plans because of student loans . . .”).

33. Edmiston et al., *supra* note 13, at 16. Another measure of student loan performance is the cohort default rate (CDR) for institutions. See *Three-Year Official Cohort Default Rates for Schools*, U.S. DEP’T EDUC., <http://www2.ed.gov/offices/OSFAP/defaultmanagement/cdr.html> (last updated May 11, 2015), archived at <http://perma.cc/UCZ7-2X5E>. The three-year CDR is the percentage of borrowers who enter repayment in a fiscal year and default by the end of the third fiscal year. See *id.* It is used in determining an institution’s eligibility for federal student aid programs. See 20 U.S.C. § 1085 (2012). CDRs were extraordinarily high in the late 1980s but have since dropped dramatically because high-default institutions became ineligible for federal aid under the Omnibus Budget Reconciliation Act of 1990. Omnibus Budget Reconciliation Act of 1990, Pub. L. No. 101-508, 104 Stat. 1388 (codified as amended in scattered sections of 2 U.S.C., 7 U.S.C., 16 U.S.C., 22 U.S.C., 26 U.S.C., 38 U.S.C., and 42 U.S.C.); see also *FY 2011 2-Year National Student Loan Default Rates*, U.S. DEP’T EDUC., <http://ifap.ed.gov/eannouncements/attachments/2013OfficialFY112YRCDRBriefing.pdf> (last visited May 18, 2015), archived at <http://perma.cc/G8AA-TPV8> (showing CDRs over time). The 2011 three-year CDR for all institutions, which is the latest available figure, was 13.7%. See *Comparison of FY 2011 Official National Cohort Default Rates to Prior Two Official Cohort Default Rates*, U.S. DEP’T EDUC. (July 26, 2014), <http://www2.ed.gov/offices/OSFAP/defaultmanagement/schooltyperates.pdf>, archived at <http://perma.cc/47HC-HJZD>. Public universities had a three-year CDR of 12.9%, compared to 7.2% for private, nonprofit institutions and 19.1% for proprietary institutions. See *id.* An alternative default measure of loan performance is the lifetime cohort default rate, calculated as the percentage of all federal loans that entered repayment in a given fiscal year and have defaulted at some point since. The cumulative lifetime default rate for the 2007 cohort is 10.3% for public four-year institutions, 9.3% for private nonprofit four-year institutions, and 24.6% for private, for-profit, four-year institutions. See *Federal Student Loan Default Rates*, ATLAS: NEW AM. (Oct. 28, 2014), <http://febp.newamerica.net/background-analysis/federal-student-loan-default-rates>, archived at <http://perma.cc/YC6T-7D74> (this article has since been updated and now appears as *Problems with Debt-Default Rates*, *Collection*). For the 2011 cohort, the figures are 7.2%, 5.3%, and 13.4%, respectively. See *id.*

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considered seriously delinquent for the purposes of this study.<sup>34</sup>

As shown in Table 2, student loan debt levels and delinquency rates vary widely by state. In the second quarter of 2014, the average student loan balance ranged from \$21,310 in Wyoming to \$42,921 in the District of Columbia. The average student loan balance in the District of Columbia appears to be an aberration, as Maryland's average student loan debt of \$30,321 is the next highest state. Student loan delinquency rates (including severe derogatory) based on balance ranged from 8% in Minnesota to 16.4% in New Mexico. The southern states have relatively higher levels of student loan delinquencies compared to northern states.

Examining the worst performing student loan a borrower holds is another measure of borrower delinquency.<sup>35</sup> For instance, "if a borrower is late on one loan while staying current on other loans, he or she is considered delinquent."<sup>36</sup> In the second quarter of 2014, delinquency rates among student loan borrowers ranged from 11.6% in North Dakota and 25.3% in Mississippi. Borrower delinquencies are generally larger than delinquency rates based on balances, likely because borrowers with multiple loans are considered delinquent even if they become past due for only one of the loans or only part of the balances due. They may also be past due only on relatively smaller loans. Larger loans are more likely to be loans for education at a private institution or a graduate degree that might lead to better job prospects and higher repayment capacity. For example, during the 2012-13 academic year, undergraduate students received an average of \$4,900 in federal loans and graduate students received an average of \$16,240 in federal loans.<sup>37</sup>

Delinquent loans, no matter how small, can have considerable consequences on individual consumers, while only delinquencies of large loans have a direct impact on the overall student loan market. With both measures of delinquencies, we can better understand how student loan performance influences borrowers and the economy.

Both measures, however, may understate the problem of delinquency because a large amount of outstanding loans are in deferment or forbearance and thus are not considered past due. We eliminate loans from the denominator that have a non-declining balance from the previous quarter and not past due. Delinquencies in terms of balance and number of borrowers in repayment are both shown in Table 2 for the second quarter of 2014. The delinquency rates are much higher if only loans in repayment are included. Total delinquencies in terms of balance in repayment ranged from 17.1% in North Dakota (more

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34. Severe derogatory loans are defined as loans that are assigned to the federal government or charged off due to bad debt.

35. Di & Perlmeter, *supra* note 1.

36. *Id.*

37. See COLL. BD., TRENDS IN STUDENT AID 2013, *supra* note 21, at 14 fig.3A & 3B.



than five percentage points higher than that including loans not in repayment) to 49.9% in Mississippi (almost doubled than that including loans not in repayment).

#### IV. POTENTIAL INFLUENTIAL FACTORS

##### A. Factors That Might Explain Student Debt Accumulation

Rising levels of student debt are often associated with the rising cost of higher education. The cost depends on whether students attend public or private, four-year or two-year, nonprofit or for-profit institutions and whether the students enroll in undergraduate or graduate programs. The average cost in 2013-14 of attending a public, in-state, four-year institution was \$22,826, of which \$8,893 was the cost of tuition and \$9,498 was the cost of room and board.<sup>38</sup> Private universities are significantly more expensive, and the average cost in 2013-14 was \$44,750.<sup>39</sup> Tuition and fees vary substantially across states, ranging from \$3,333 in Wyoming to \$12,459 in Vermont in 2010.<sup>40</sup> Additionally, graduate programs cost more than undergraduate programs. There were 2.1 million full-time equivalent (FTE) graduate students in fall 2012, accounting for 13% of all postsecondary students.<sup>41</sup> The average federal loan per FTE graduate student is 2.6 times more than the loan of an undergraduate student.<sup>42</sup>

Another potential factor influencing student borrowing is family financial resources. Research suggests a significant link between the financial resources of parents and students' decisions to pursue higher education.<sup>43</sup> For instance, recent research finds that "material hardship" in the family significantly reduces the likelihood of parent participation in a 529 college savings plan.<sup>44</sup> While the overall amount of assets contained in 529 savings plans has been rising in recent years,<sup>45</sup> they remain under-utilized and are insufficient to cover

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38. See COLL. BD., TRENDS IN COLLEGE PRICING 2013, at 11 fig.1 (2013), available at <http://trends.collegeboard.org/sites/default/files/college-pricing-2013-full-report.pdf>, archived at <http://perma.cc/U4LR-63ZG>.

39. See *id.*

40. See Table 3.

41. See COLL. BD., TRENDS IN STUDENT AID 2013, *supra* note 21, at 13.

42. See *Average Annual Amount Borrowed in Federal Subsidized and Unsubsidized Loans over Time*, COLL. BD., <http://trends.collegeboard.org/student-aid/figures-tables/average-annual-amount-borrowed-federal-subsidized-unsubsidized-loans-time> (last visited May 18, 2015), archived at <http://perma.cc/PM75-2V95>. The average amount borrowed by graduate students was \$17,560 in 2013-14, while the average amount borrowed by undergraduate students was \$6,670. *Id.*

43. See generally Martha J. Bailey & Susan M. Dynarski, *Inequality in Postsecondary Education*, in *WHITHER OPPORTUNITY? RISING INEQUALITY, SCHOOLS, AND CHILDREN'S LIFE CHANCES* 117 (Greg J. Duncan & Richard J. Murnane eds., 2011).

44. See generally Nora Wikoff et al., *Material Hardship and 529 College Savings Plan Participation: The Mitigating Effects of Child Development Accounts*, 50 SOC. SCI. RES. 189 (2015).

45. See generally COLL. SAV. PLANS NETWORK, *COLLEGE SAVINGS PLANS NETWORK 529 REPORT: AN EXCLUSIVE YEAR-END REVIEW OF 529 PLAN ACTIVITY* (Mar. 2015), available at <http://www.collegesavings.org>.

the cost of a college education for most families.<sup>46</sup> The variation in these plans across states is not a suitable indicator of the financial resources available to families for financing higher education at a state level, as not all states require residents to invest in their own state's plan in order to receive tax benefits.<sup>47</sup> Thus, such a measure would undervalue savings in states without residency restrictions relative to other states. Instead, median family income is used as the primary measure of a family's financial resources. Annual inflation-adjusted household median income for the United States has fallen significantly since the 2007-09 recession and remains well below its level in 2000. In 2007, inflation-adjusted median household income in the United States was \$56,436, but by 2013 it declined to \$51,939.<sup>48</sup> Because few families have sufficient savings to finance higher education, this reduction in household income makes college less affordable for most families.

Research suggests that children whose parents provide more educational resources perform better in school.<sup>49</sup> Other studies have pointed to the correlation between parent's level of education and children's educational success.<sup>50</sup> Those students with highly educated parents are more likely to have

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org/includes/pdfs/March%202015%20529%20Report.pdf, archived at <http://perma.cc/7J7W-SEJL>. From 1996 to 2014, the value of assets in 529 savings plans rose from \$2.4 billion to \$247 billion. *Id.* at 4. For general information about 529 plans, see *An Introduction to 529 Plans*, U.S. SEC. & EXCH. COMM'N, <http://www.sec.gov/investor/pubs/intro529.htm> (last updated Jan. 6, 2014), archived at <http://perma.cc/Z4HG-V2AR>.

46. See COLL. SAV. PLANS NETWORK, *supra* note 45, at 5. As of December 2014, the average 529 account balance was only \$20,474, far below the amount needed to finance a four-year education. *Id.*

47. Most states require residents to invest their 529 savings in their own state's plan in order to receive a personal income tax deduction. But Arizona, Kansas, Maine, Missouri, and Pennsylvania offer a personal income tax deduction for 529 contributions even if the 529 plan is based in another state. The 529 savings that residents of these states have in these other states' plans would not be reflected in a measure of accumulated 529 savings that is based on balances in each state's plan. Thus, an empirical measure of 529 savings in these states could significantly bias the estimate of the impact of family financial resources on student loan debt balances and delinquency.

48. See *Real Median Household Income in the United States*, FED. RESERVE BANK ST. LOUIS, <https://research.stlouisfed.org/fred2/series/MEHOINUSA672N/> (last updated Sept. 30, 2014), archived at <https://perma.cc/C9S8-GT9B> (data available only through 2013).

49. See Jay D. Teachman, *Family Background, Educational Resources, and Educational Attainment*, 52 AM. SOC. REV. 548, 553-54 (1987). Educational resources in the study included whether there is a specific place to study in the home, whether there are reference books, a daily newspaper, and whether there was a dictionary or encyclopedia in the home. *Id.* at 550.

50. See Deborah A. Cobb-Clark & Trong-Ha Nguyen, *Educational Attainment Across Generations: The Role of Immigration Background*, 88 ECON. REC. 554, 554 (2012); Jin Huang, *International Transmission of Educational Attainment: The Role of Household Assets*, 33 ECON. EDUC. REV. 112, 112 (2013); Teresa Abada et al., *Group Differences in Educational Attainment Among the Children of Immigrants*, STAT. CAN. (Sept. 2008), [http://globalnetwork.princeton.edu/bellagio/Group%20Differences%20in%20Educational%20Attainment%20Among%20the%20Children%20of%20Immigrants%20\(2\).pdf](http://globalnetwork.princeton.edu/bellagio/Group%20Differences%20in%20Educational%20Attainment%20Among%20the%20Children%20of%20Immigrants%20(2).pdf), archived at <http://perma.cc/RZ59-46EG>; Mette C. Deding & Mohammad Azhar Hussain, *Children's Educational Attainment: Effects of Parents' Education, Living Conditions, and Other Background Factors*, DANISH NAT'L INST. SOC. RES. (2002), [http://www.sfi.dk/Files/Filer/SFI/Pdf/Working\\_papers/WP27MCDMHDanishChildrensEducational.pdf](http://www.sfi.dk/Files/Filer/SFI/Pdf/Working_papers/WP27MCDMHDanishChildrensEducational.pdf), archived at <http://perma.cc/WT7P-AMB9>; Garnett Picot & Feng Hou, *Preparing for Success in Canada and the United States: The Determinants of Educational Attainment Among Children of Immigrants*, STAT. CAN. 5 (Feb. 2011), <http://www.statcan.gc.ca/pub/11f0019m/11f0019m2011332-eng.pdf>, archived at <http://perma.cc/>

access to resources to help finance a college education with less borrowing.<sup>51</sup> To account for the role of educational attainment in determining average debt burdens and delinquency, we include in the empirical model the shares of the population age twenty-five and older that has graduated with a high school diploma and the share that has received a college degree as explanatory variables.

Other characteristics that may explain student loan borrowing include creditworthiness, indebtedness, age, race, and ethnic compositions of the population. Credit scores and the indebtedness may impede access to credit; age may be correlated with the stage of life one is in, such as young adult; and cultural background may be associated with willingness to borrow. We include a set of age variables to account for varying propensities to hold and repay student loan debt.

Much of the increase in student loan debt burden is related to the recent recession and slow recovery. As laid-off workers went back to school, young college graduates had difficulty securing jobs, and parents were not able to save enough money to pay for their children's education. The unemployment rate climbed rapidly during the recession. For younger adults, who commonly hold student loan debt, the unemployment rate is especially high. The unemployment rate among those aged from twenty to twenty-four peaked at 17.2% in April of 2010 (seasonally adjusted), while the unemployment rate for the nation as a whole (age sixteen and older) was 9.9%.<sup>52</sup> While the unemployment rate for this age group has declined since the peak, a large gap remains. The unemployment rate for those aged twenty to twenty-four in March of 2015 was 10.4%, compared to 5.9% for all age groups.<sup>53</sup> We use

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V4HR-LGZR.

51. See Abada et al., *supra* note 50, at 7.

52. Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey*, U.S. DEP'T LAB., <http://data.bls.gov/timeseries/LNS14000036> (last visited May 19, 2015), archived at <http://perma.cc/5ABS-VGQJ>. The unemployment rate is the number of people who are not currently working but are actively seeking employment, divided by the number of people in the labor force (unemployed plus employed). *Id.*

53. Official unemployment statistics in many ways do not present a complete picture of the employment difficulties of young people. For example, marginally attached workers are not counted in the official unemployment rate, nor are part-time workers who would like to work full-time but are unable to find full-time work for economic reasons. "Marginally attached" workers are persons not in the labor force who want and are available for work, and who have looked for a job sometime in the prior twelve months (or since the end of their last job if they held one within the past twelve months), but were not counted as unemployed because they had not searched for work in the four weeks preceding the survey. A substantial subset of the marginally attached are "discouraged workers," who believe there are no jobs available or there are none for which they would qualify. The national unemployment rate in March 2015 jumps to 10.9% when these struggling workers are included. See Bureau of Labor Statistics, *Labor Force Statistics from the Current Population Survey*, U.S. DEP'T LAB., <http://data.bls.gov/timeseries/LNS13327709> (last visited May 19, 2015), archived at <http://perma.cc/9RLD-6PRX>. In addition, a number of other workers are employed full-time but in jobs that are below their skill levels and pay well below their training and pre-graduate expectations. Underemployment is an especially severe problem for recent college graduates. A recent analysis by the Associated Press suggests that over 50% of recent college graduates are either unemployed or underemployed by this definition.

unemployment rates to indicate the health of a state's economy.

The price or interest rate on student loans may impact decisions about how much to borrow, although the full impact of the interest rate for federal loans is not felt until after leaving school. To date, there are no definitive studies about the relationship between student loans and interest rates. Data on the relationship between other types of loans and interest rates reveal mixed results.<sup>54</sup> For instance, interest rates are known to reduce mortgage applications, whereas auto loan applications appear to be relatively insensitive to loan rates.<sup>55</sup> Interest rates on federal student loans vary over time and are included in our models. The 2013 Bipartisan Student Loan Certainty Act of 2013 ties federal student loan interest rates to Treasury rates.<sup>56</sup> Under this Act, interest rates will be determined each June for new loans to be made during the upcoming award year.<sup>57</sup> Each loan will have a fixed interest rate for the life of the loan.<sup>58</sup>

Given the limitations of family income and college savings vehicles, most students seek some type of financial aid, in the form of scholarships, grants, or loans. While the bulk of these are federal programs,<sup>59</sup> a number of state

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See *Half of New Graduates Are Jobless or Underemployed*, USA TODAY (Apr. 23, 2012), <http://usatoday30.usatoday.com/news/nation/story/2012-04-22/college-grads-jobless/54473426/1>, archived at <http://perma.cc/EN8G-2ETD>. Others are fully employed but face the challenge of lower-than-expected incomes. *Id.*

54. See Libby A. Nelson, *The Interest Rate Impact*, INSIDE HIGHER ED (July 8, 2013), <https://www.insidehighered.com/news/2013/07/08/how-much-impact-will-interest-rate-increase-have-student-borrowing>, archived at <https://perma.cc/HP7R-J9YF>.

55. See Nuno Martins & Ernesto Villanueva, *Does High Cost of Mortgage Debt Explain Why Young Adults Live with Their Parents?*, 7 J. EUR. ECON. ASS'N 974, 1004 (2009). See generally Orazio P. Attanasio et al., *Credit Constraints in the Market for Consumer Durables: Evidence from Micro Data on Car Loans*, 49 INT'L ECON. REV. 401 (2008).

56. Bipartisan Student Loan Certainty Act of 2013, Pub. L. No. 113-28, 127 Stat. 506 (stating procedure for determining interest rates for student loans).

57. *Id.*

58. *Id.*

59. Student loans are one part of an extensive federal student aid system that also includes grants and work-study allocations. Federal Pell grants are usually available only to lower-income undergraduate students who do not already have a degree. See *Federal Pell Grants*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/grants-scholarships/pell> (last visited May 19, 2015), archived at <https://perma.cc/JRN7-99WP>. The maximum award per year is \$5,550. See *id.* For students deemed to need the most assistance, Federal Supplemental Educational Opportunity Grants (FSEOG), with a range of \$100 to \$4,000, are available in addition to Pell grants. See *FSEOG (Grants)*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/grants-scholarships/fseog> (last visited May 19, 2015), archived at <https://perma.cc/JE6J-QUXJ>. Students who have lost a parent or guardian in Iraq or Afghanistan could be eligible for the Iraq and Afghanistan Service Grant, which has an annual maximum of \$5,500. See *Iraq & Afghanistan Service Grants*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/grants-scholarships/iraq-afghanistan-service> (last visited May 19, 2015), archived at <https://perma.cc/S9KW-DBRE>. Teacher Education Assistance for College and Higher Education (TEACH) grants are available at participating schools for students working towards elementary or secondary education degrees. See *TEACH Grants*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/grants-scholarships/teach> (last visited May 19, 2015), archived at <https://perma.cc/WY6P-JWWX>. Federal work-study programs are also based on need. See *Work-Study Jobs*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/work-study> (last visited May 19, 2015), archived at <https://perma.cc/8R8W-8CFB>. Students can receive

programs also exist that can potentially reduce the gap between higher education costs and personal resources.<sup>60</sup> This state aid may reduce levels of student borrowing. About 8% of total grant aid for higher education in the 2013-14 academic year was state aid.<sup>61</sup> At four-year institutions in the 2010-11 academic year, about 37% of students attending public-institutions received state or local grants, while this was true for only 27% of students at private nonprofit institutions and 11% of students at private for-profit institutions.<sup>62</sup>

The Free Application for Federal Student Aid (FAFSA) is also used to apply to most state programs. State financial aid can be limited to only students attending an institution in their state of residence.<sup>63</sup> State aid can come in the form of scholarships, grants, or loans. Many scholarship programs combine merit-based and need-based criteria. Over time, a larger share of state grant aid has become merit-based. Nevertheless, state grant dollars distributed based on need have increased from \$351 per FTE undergraduate student in 1992-93 (in 2012 dollars) to \$532.50 per FTE undergraduate student in 2012-13, likely with the hope to improve retention in the state, encourage private donation, and enhance school reputation.<sup>64</sup> Similar to federal student loans, state student loans can be forgiven if one works in a qualified field, generally public service.<sup>65</sup> Roughly 25% of all workers are employed in the public service sector.<sup>66</sup> Additionally, some states offer exemptions from tuition based on personal circumstances. For example, one exemption program in Texas, "College for All Texans," offers college financial assistance for those who were

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\$100-\$4,000 annually. *See id.* Grants and work-study aid do not have to be repaid, but many of the programs are limited by budget appropriations and are currently underfunded. Finally, federal tax rules allow for a variety of deductions and credits for higher education expenses. *See Tax Benefits*, U.S. DEP'T EDUC., <https://studentaid.ed.gov/types/tax-benefits> (last visited May 19, 2015), *archived at* <https://perma.cc/SF79DB43>.

60. *See State Financial Aid Programs*, NAT'L ASS'N OF STUDENT FIN. AID ADMIN., [http://www.nasfaa.org/students/state\\_financial\\_aid\\_programs.aspx](http://www.nasfaa.org/students/state_financial_aid_programs.aspx) (last visited May 19, 2015), *archived at* <http://perma.cc/X2RC-3Q75>.

61. Includes institutional grants and grants from private sources, including employers. *See* COLL. BD., TRENDS IN STUDENT AID 2013, *supra* note 21, at 10.

62. GRACE KENA ET AL., NAT'L CTR. ECON. STAT., THE CONDITION OF EDUCATION 2014, at 173 fig.2 (May 2014), *available at* <http://nces.ed.gov/pubs2014/2014083.pdf>, *archived at* <http://perma.cc/MR4E-97UX>. Table demonstrates "[p]ercentage of first-time, full-time undergraduate students receiving financial aid at 4-year degree-granting institutions, by type of aid and institutional control" for 2011-12. *Id.*

63. *See supra* note 62.

64. *Need-Based and Non-Need-Based State Grants per Undergraduate Student over Time* fig.26A, COLL. BD., <http://trends.collegeboard.org/student-aid/figures-tables/need-based-non-need-based-state-grants-undergraduate-student-time> (last visited May 19, 2015), *archived at* <http://perma.cc/LY7R-8AF7> [hereinafter *Need-Based and Non-Need-Based State Grants*].

65. CONSUMER FIN. PROT. BUREAU, PUBLIC SERVICE & STUDENT DEBT: ANALYSIS OF EXISTING BENEFITS AND OPTIONS FOR PUBLIC SERVICE ORGANIZATIONS 5 (Aug. 2013), *available at* [http://files.consumerfinance.gov/f/201308\\_cfpb\\_public-service-and-student-debt.pdf](http://files.consumerfinance.gov/f/201308_cfpb_public-service-and-student-debt.pdf), *archived at* <http://perma.cc/D8A8-BM23>.

66. *Id.*

previously in foster or other residential care and have since been adopted.<sup>67</sup>

The amount of state support for higher education, not restricted to student financial aid, varies widely across states. In 2014, inflation-adjusted state and local higher education funding per FTE ranged from \$2,360 in New Hampshire to \$15,561 in Wyoming.<sup>68</sup> The mean amount of state appropriations for higher education per FTE was \$6,552.<sup>69</sup> The mean amount of grant state aid on student per FTE in 2013 was \$710.<sup>70</sup>

### B. Factors That Might Explain Student Loan Performance

Many factors that may contribute to a large accumulation of student loan debt could also affect the ability of borrowers to repay their loans. For example, whether paying back student loans adds to financial stress depends on family income and credit access. Research shows that parental income is negatively associated with the probability of student loan default.<sup>71</sup> Unemployment reduces income, which makes student loan repayment significantly more difficult. A study of California borrowers from 2002 revealed that 23.2% of those who filed for unemployment compensation defaulted on a student loan, where those who did not file had a 9.7% default rate.<sup>72</sup> It is likely that “many of the unemployed who did not default received a deferment or forbearance.”<sup>73</sup>

As we do in the student loan balance model, we examine the relationship between student loan delinquency with age, education level, creditworthiness, and interest rates. In previous studies of student loan performance, race and ethnicity were found to be associated with delinquencies. For example, Knapp and Seaks found race to be one of the most significant factors in the probability of student loan default.<sup>74</sup> Specifically, they found the probability of default was 10% higher for Black students. Schwartz and Baum reached a similar estimate of 8%.<sup>75</sup> Macy and Terry additionally found that the percentage of students who are Hispanic serves as a primary determinant of borrowing and

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67. See *Adopted Students Formerly in Foster or Other Residential Care*, COLL. FOR ALL TEXANS, <http://www.collegeforalltexans.com/apps/financialaid/tofa2.cfm?ID=551> (last visited Aug. 12, 2015), archived at <http://perma.cc/BGW4-N8GG>.

68. STATE HIGHER EDUC. EXEC. OFFICERS ASS'N, SHEF: FY 2014: STATE HIGHER EDUCATION FINANCE 32 tbl.5 (2014), available at <http://www.sheeo.org/sites/default/files/project-files/SHEF%20FY%202014-2015%20410.pdf>, archived at <http://perma.cc/T3XZ-EKY6>.

69. See *id.*

70. See *Need-Based and Non-Need-Based State Grants*, *supra* note 64.

71. See Laura Greene Knapp & Terry G. Seaks, *An Analysis of the Probability of Default on Federally Guaranteed Student Loans*, 74 REV. ECON. & STAT. 404, 408 (1992).

72. JENNIE H. WOO, CLEARING ACCOUNTS: THE CAUSES OF STUDENT LOAN DEFAULT 9 (2002); Edmiston et al., *supra* note 13, at 17.

73. Edmiston et al., *supra* note 13, at 17.

74. See Knapp & Seaks, *supra* note 71, at 406.

75. SAUL SCHWARTZ & SANDRA R. BAUM, SOME NEW EVIDENCE ON THE DETERMINANTS OF STUDENT LOAN DEFAULT (1989).

default.<sup>76</sup> Participation rates in higher education for Blacks and Hispanics (and Native Americans) also tend to lag well behind those of Whites and Asians.<sup>77</sup>

One critical factor in determining repayment (but not debt accumulation of student loans) is college completion.<sup>78</sup> Student loan repayment is especially burdensome for borrowers who do not finish their degrees or certificate programs.<sup>79</sup> Knapp and Seaks have found graduation to be the “single variable [in their model of probability of default] with the greatest statistical and economic significance.”<sup>80</sup> Less than 60% of those who enroll in a post-secondary institution complete their program of study within six years.<sup>81</sup> The annual United States unemployment rate in September 2014 was 3.2% for workers with college degrees, compared to 5.4% who attended college but did not complete a degree (or an associate degree).<sup>82</sup> Wages and salaries also are substantially higher for college graduates. Borrowers who dropped out of college with student debt had a default rate of 16.8%, compared to a default rate of 3.7% for borrowers who completed their degree.<sup>83</sup> In order to account for this effect, we have controlled for six-year graduation rates by state for a subset of empirical models.

Policy analysts have questioned whether the growth of for-profit institutions has contributed to student loan default.<sup>84</sup> Between the years 2000-11, enrollment in for-profit universities more than tripled, while more traditional colleges and universities saw a much smaller increase of less than one third during this same period.<sup>85</sup> Considering the large increase in for-profit

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76. See generally Anne Macy & Neil Terry, *The Determinants of Student College Debt*, 34 SW. ECON. REV. 15 (2007), available at <http://www.ser.tcu.edu/2007/SER2007%20Macy%20Terry%2015-26.pdf>, archived at <http://perma.cc/L5A2-WJRU>.

77. See generally George D. Kuh et al., *Piecing Together the Student Success Puzzle: Research, Propositions, and Recommendations*, 32 ASHE HIGHER EDUC. REP., no. 5, 2007, at 1, available at <http://eric.ed.gov/?id=EJ791634>, archived at <http://perma.cc/HZ66-JPSK>.

78. See LAWRENCE GLADIEUX & LAURA PERNA, NAT'L CTR. FOR PUB. POL'Y & HIGHER EDUC., BORROWERS WHO DROP OUT: A NEGLECTED ASPECT OF THE COLLEGE STUDENT LOAN TREND (2005), available at <http://www.highereducation.org/reports/borrowing/borrowers.pdf>, archived at <http://perma.cc/K4YM-ATQY>. Delaying enrollment after high school, attending college only part-time, and working full-time while enrolled also are high risk factors for not completing degrees. *Id.*

79. *Id.* at 9.

80. Knapp & Seaks, *supra* note 71, at 408.

81. See Table 326.10. *Graduation Rates of First-Time, Full-Time Bachelor's Degree-Seeking Students at 4-Year Postsecondary Institutions, by Race/Ethnicity, Time to Completion, Sex, and Control of Institution: Selected Cohort Entry Years, 1996 Through 2006*, NAT'L CENTER FOR EDUC. STAT. (Jan. 2014), [http://nces.ed.gov/programs/digest/d13/tables/dt13\\_326.10.asp](http://nces.ed.gov/programs/digest/d13/tables/dt13_326.10.asp), archived at <http://perma.cc/6ESG-TYAF>.

82. See *Labor Force Statistics from the Current Population Survey*, U.S. DEP'T LAB. tbl.7, <http://www.bls.gov/cps/cpsaat07.htm> (last updated Feb. 12, 2015), archived at <http://perma.cc/YKV8-FC2D>.

83. See MARY NGUYEN, DEGREELESS IN DEBT: WHAT HAPPENS TO BORROWERS WHO DROP OUT? 5 fig.4 (2012).

84. See Edmiston et al., *supra* note 13, at 19; see also CONSUMER FIN. PROT. BUREAU, PRIVATE STUDENT LOANS 31 (2012), available at [http://files.consumerfinance.gov/f/201207\\_cfpb\\_Reports\\_Private-Student-Loans.pdf](http://files.consumerfinance.gov/f/201207_cfpb_Reports_Private-Student-Loans.pdf), archived at <http://perma.cc/5PKP-2AV3>.

85. Edmiston et al., *supra* note 13, at 19.

university students, the low completion rates at these institutions is concerning.<sup>86</sup>

Completion rates within six years of beginning a bachelor degree program are about 28 percent for for-profit colleges and universities, compared to 56 percent for four-year, public institutions and 65 percent for four-year, private, not-for-profit institutions. Graduates from for-profit institutions also are more likely to be unemployed and tend to make lower incomes upon leaving than do those from more traditional institutions, whether or not they have graduated.<sup>87</sup>

The percentage of students enrolled in private, for-profit colleges is included in this model to account for this reality.

In addition to the 2003-12 student loan data available through the Federal Reserve Bank of New York Consumer Credit Panel/Equifax, we compiled a state-level dataset to explain the variation in average student loan balance and performance across states. The 2010 summary statistics of main variables we constructed are listed in Table 3.

#### V. EMPIRICAL MODEL AND RESULTS

We examine the institutional, demographic, economic, and state policy influences with panel data to understand the cross-state and over-time variations in student loan debt and performance. Although there is more substantial variation in student loan debt and performance across states than over time, a post-estimation Hausman test suggests that using a random-effects model may not provide consistent estimates of the coefficients, despite its efficiency. We therefore use a fixed-effects model so that the time-invariant unobserved effects are differenced out and will not confound the estimation of the impact of other factors that may explain variation in loan debt and performance. We also controlled for time fixed effects by incorporating year dummies. The model takes this form:

$$y_{st} = \alpha_s + X_{st}\beta + \gamma_t + \varepsilon_{st}$$

In this model,  $y_{st}$  is the natural log of average student loan balance in the debt model and is the delinquency rate in the performance model.  $X_{st}$  is a vector of explanatory variables that includes higher education cost, family characteristics, the economic environment, and state policy in the balance model, and also includes the college graduation rate and student loan indebtedness in the performance model. Additionally,  $\alpha_s$  is the state fixed effect, and  $\beta$  is a set of coefficients to be estimated on  $X$ , and  $\gamma_t$  is year fixed effect. Finally,  $\varepsilon_{st}$  is idiosyncratic error. The state fixed effects control for

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86. *See id.*

87. Deming et al., *supra* note 32, at 15-16.



time-invariant differences across states, while the year fixed effects control for aggregate time trends among the states. State-level, time-varying explanatory variables help us understand how these factors affect the remaining variation in student loan debt and performance across states and over time. We estimate the coefficients with robust standard errors to account for heteroskedasticity.

The results of the fixed-effect model used to explain the amount of student loan borrowing and various delinquency measures are presented in Table 4. We find that the share of the young population is positively associated with loan balance and overall delinquency in terms of balance.<sup>88</sup> One percentage point increase in the population under twenty-five-years-old is associated with about a 3% increase in average student loan balance.<sup>89</sup> A higher percent of young state population is also associated with some measures of delinquency.<sup>90</sup> A one percentage point increase in the population under twenty-five-years-old is associated with a 1.9 percentage point increase in delinquency in terms of balance in repayment.<sup>91</sup> The average age of student loan debtors is not associated with student loan performance, no matter which measure is considered.<sup>92</sup> Additionally, average loan balance has no influence on loan performance.<sup>93</sup>

As expected, creditworthiness indicated by average Equifax Risk Scores of borrowers does not significantly influence the amount borrowed.<sup>94</sup> Most student loans are federal loans. The effects are small, likely because credit history is not considered in awarding federal student loans, as they are for private loans or loans that are cosigned by parents. Average Risk Scores, however, are significantly negatively associated with various measures of delinquency rates, as expected.<sup>95</sup> A one-point increase in Risk Score is associated with a 0.15 percentage-point decrease in total delinquency on balances and a 0.26 percentage-point decrease in delinquencies for borrowers.<sup>96</sup> The impacts on delinquencies in repayment are much larger: 0.45 percentage point and 0.54 percentage point lower for delinquencies in terms of balance and borrowers, respectively.<sup>97</sup>

Average student loan balance is not significantly associated with the composition of race or ethnicity of population of the state. Controlling for other factors, however, states with higher shares of the Asian population tend to have lower overall student loan delinquencies in terms of both balances and

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88. *See infra* Table 4.

89. *Id.*

90. *Id.*

91. *Id.*

92. *See infra* Table 4.

93. *Id.*

94. *Id.*

95. *Id.*

96. *Infra* Table 4.

97. *Id.*

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borrowers, and it is also the case for loans in repayment. For example, a one percentage point increase in the share of the population that is Asian is associated with a 0.46 percentage point decrease in overall delinquency of total balance, and a 0.7-0.8 percentage point decrease in overall delinquency, or delinquency for loans in repayment.<sup>98</sup> In contrast, a one percentage point increase in the Hispanic share of state population is associated with 0.4-0.5 percentage point increase in delinquency measured overall student loan delinquencies and delinquencies in terms of balance in repayment.<sup>99</sup> Percent Hispanic is not significantly associated with delinquencies for borrowers in repayment. Percent Black is not significantly associated with loan performance.

A higher share of a state's population with a college degree is associated with less borrowing and lower overall delinquencies in terms of balance but does not significantly affect loan performance based on number of borrowers or loans in repayment.

The results of economic variables such as income and unemployment are affected by the inclusion of the year dummies. Our earlier results, without including the time fixed effects, suggest that income has a negative influence on delinquencies measured for loans or borrowers in repayment and that there is more borrowing in states with higher unemployment rates. Controlling for year effects, however, reduces the influences of income, likely because the time fixed effects on student loan borrowing and performance are largely correlated with the time-varying economic variables during the studied period. The remaining negative influence of unemployment on amount borrowed, after taking out time effects, could indicate the lower bound of willingness to pursue higher education in a state that has lower job prospects. Unemployment is negatively associated with delinquencies of borrowers in repayment no matter if time fixed effects are included or not. It is possible that loans get deferred in the situation of job loss; therefore, unemployment is no longer positively associated with delinquency for loans in repayment. For households in states with lower willingness to borrow, they are also less likely to be delinquent.

Including the time fixed effects also diminishes the significance of the positive influence of tuition and fees on amount borrowed and delinquencies and the negative influence of state support for higher education on borrowing. Higher state support is associated with higher delinquencies in terms of number of borrowers in repayment. It is possible that support is unlikely for students who are already in repayment, and support could possibly even increase the cost for these students if they are not in the form of financial aid, but used for non-student purposes. Financial aid per FTE is associated with a lower level of borrowing. The percent of the aid that is need-based and enrollment patterns

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98. *Id.*

99. *Id.*

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are not associated with the amount borrowed or loan performance. State enrollment patterns are insignificant in all models except that the percent of enrollment in two-year colleges is negatively associated with delinquencies in terms of balance for loans in repayment.

One caveat of using state-level variables as proxies for individual borrower characteristics is potential measurement error associated with the assumption that state aggregates can represent the conditions consumers are facing. We use some of the state-level demographic characteristics as proxies for individual characteristics, but their macroeconomic impact may have a different influence on individual decisions. For example, state median income and unemployment may influence student loan borrowing in both directions. Higher incomes and lower unemployment can bring additional financial resources and less borrowing for individuals, but they could also imply a greater economic return to education, such as better job prospects, and a greater willingness to borrow to pursue higher education, and thus, a higher amount to repay. In addition, borrowers may not reside in the same state in which they go to school. State policy may only influence those who will remain in the state after graduation. High unemployment could affect families' ability to repay a student loan, but also drive residents to other states to get higher education and to find opportunities.

We use the percentage of freshmen going to in-state universities to control for the share of students that is affected by state policy.<sup>100</sup> The sample size was reduced because the information is collected every other year by the National Center for Education Statistics. The results are similar so we only report those without the control of percent in-state freshmen enrollment.

Overall, variation in demographics such as age and race/ethnicity, education costs, economic environment, and creditworthiness contributes to state variation, while enrollment patterns and policy factors have weaker influences. These factors may not be identifiable due to collinearity when state- and time-fixed effects are controlled for.

## VI. DISCUSSION AND FUTURE STUDY

College may not be for everyone, but college education and related experiences are priceless for many. Numerous studies show that the lifelong earnings of college graduates far exceed those of high school graduates or college non-graduates and going to college has benefits reaching well beyond economic returns.<sup>101</sup> College graduates are more likely to live healthier and happier lives. For society as a whole, access to higher education elevates the quality of the population and keeps the economy competitive, reduces

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100. The results are similar and available upon request to the authors.

101. See generally BAUM ET AL., *supra* note 4; COLL. SAV. PLANS NETWORK, *supra* note 45.

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unemployment, contributes to higher tax revenues, and lowers the burden to public services. Further, repaying a loan on time can help borrowers build credit standing for future borrowing, learn to manage personal finances, and possibly motivate them to study harder and graduate on time.

With excessive student loan debt, however, some students may not be able to graduate and pursue their preferred career paths. A better understanding of the factors that influence individuals' and families' investment in human capital will help them to handle their student debt and make better decisions that may generate positive returns in the long run.

Due to the lack of borrower-level information, we attempt to understand the pattern and trends of student loan borrowing and performance with aggregate information at the state level. States with a higher percentage of young people tend to have higher student loan balances and higher delinquency rates measured in terms of balance in repayment. The analysis suggests that states with higher student loan balances are not necessarily states with higher rates of delinquencies.

States with higher percentages of Asian population tend to have lower rates of delinquencies. States with a higher share of Hispanic population tend to have higher rates of delinquency. States with higher average credit scores tend to have lower rates of delinquency. State median income, unemployment, tuition and fees appear to have little impact on student loan borrowing and performance when time fixed effects are controlled for. Financial aid for higher education is associated with lower balances, but does not affect delinquency. The share of financial aid that is need-based has indiscernible effects on borrowing and loan performance. Enrollment patterns also have an indiscernible impact on balances or performance of student loans. Using models excluding time fixed effects lead to more significant estimates of the economic variables; the results, however, may have omitted variable biases because of possible time-varying servicer reporting criteria that are unknown to researchers in earlier years of the data.

In future studies, more data on mobility and additional borrower-level information are needed. In particular, more precise measures of family financial resources and job prospects will help us better understand consumer decisions. With more consistent data reporting, we will also become more confident to decompose the time fixed effects by observable explanatory variables and provide richer discussion of the economic environment and state policies. With the angle of state analysis, we expect to contribute to the discussion of student loan debt and performance issues and inform regulatory changes that address the affordability of higher education.

**Table 1: The Composition of Student Financial Aid  
and Non-Federal Loans, 2012-13**

Source	Share (%)	Source	Share (%)
Federal Grants	19.0	State Grants	3.9
Federal Loans	41.0	Institutional Grants	18.0
Federal Work-Study	0.4	Private and Employer Grants	5.9
Education Tax Breaks	8.2	Non-federal Loans	3.6

Source: COLL. BD., TRENDS IN STUDENT AID 2013, *supra* note 21, at 12 tbl.1A, 13 tbl.1B.

**Table 2: State Ranks of Student Loan Balance and Performance (2014, second quarter)**

State	Rank	Mean consumer balance (\$)	Rank	Total delinquencies based on balance (%)	Rank	Total delinquencies, in repayment, based on balance (%)
DC	1	42,921	42	9.3	43	20.7
MD	2	30,321	32	10.6	27	26.3
GA	3	29,275	13	13.0	3	39.5
NY	4	28,157	43	9.2	40	21.4
VA	5	28,044	36	9.9	31	24.0
IL	6	27,832	40	9.7	33	23.8
FL	7	27,164	7	14.4	4	38.9
SC	8	27,073	11	13.4	7	38.4
NJ	9	26,908	44	9.2	42	20.8
AL	10	26,895	18	12.1	9	36.5
CA	11	26,891	23	11.5	24	27.1
MA	12	26,639	47	8.5	48	17.9
CT	13	26,556	41	9.5	41	21.2
OR	14	26,428	24	11.4	22	27.9
LA	15	26,346	8	13.9	8	37.8
CO	16	26,215	30	10.8	30	25.2
DE	17	26,161	29	10.9	25	27.0
MI	18	25,970	22	11.5	18	31.4
TN	19	25,911	9	13.6	10	36.3
AZ	20	25,825	12	13.3	14	33.6
NC	21	25,777	19	11.7	17	31.8
MS	22	25,747	4	15.2	1	49.9
PA	23	25,732	34	10.3	37	23.1
OH	24	25,571	21	11.6	20	29.7
MO	25	25,525	16	12.4	16	31.8
NH	26	25,351	39	9.7	44	20.5
VT	27	25,187	49	8.2	50	17.3

WA	28	25,034	38	9.8	39	21.9
HI	29	24,838	31	10.7	35	23.8
NV	30	24,832	5	14.6	12	35.7
AK	31	24,701	15	12.6	29	26.1
RI	32	24,502	20	11.6	28	26.2
IN	33	24,163	17	12.2	19	30.8
KS	34	24,156	27	11.1	23	27.1
WV	35	24,084	2	16.0	5	38.9
NM	36	23,974	1	16.4	2	40.5
TX	37	23,965	10	13.5	15	32.2
ID	38	23,822	26	11.3	21	29.7
MN	39	23,704	51	8.0	49	17.8
AR	40	23,658	6	14.5	6	38.8
OK	41	23,555	3	15.3	11	36.1
ME	42	23,514	33	10.4	36	23.4
KY	43	23,450	14	12.8	13	34.9
NE	44	23,213	48	8.3	47	19.4
UT	45	23,185	37	9.8	34	23.8
MT	46	23,064	25	11.4	26	26.7
WI	47	22,899	50	8.1	46	19.5
IA	48	22,824	35	10.2	38	22.3
ND	49	21,737	46	8.7	51	17.1
SD	50	21,606	45	9.2	45	20.1
WY	51	21,310	28	11.0	32	23.9

Source: Author's calculation based on the Federal Reserve Bank of New York Consumer Credit Panel/Equifax

**Table 2: State Ranks of Student Loan Balance and Performance (2014, second quarter) (continued)**

State	Rank	Total delinquencies by consumer (%)	Rank	Total delinquencies in repayment by consumer (%)
DC	23	17.3	30	25.6
MD	28	16.4	24	27.5
GA	14	20.2	4	38.6
NY	42	13.9	43	22.5
VA	36	14.9	31	25.1
IL	35	15.0	32	24.9
FL	7	21.7	6	38.3
SC	10	20.6	8	37.6
NJ	39	14.6	39	23.5
AL	16	19.6	11	37.1
CA	21	17.8	22	29.5
MA	45	13.2	47	20.1
CT	41	14.5	41	23.0
OR	26	17.0	23	28.5
LA	8	21.3	7	37.9
CO	32	15.4	33	24.9
DE	29	16.4	25	27.4
MI	19	18.4	17	32.4
TN	11	20.6	12	36.7
AZ	12	20.4	14	34.7
NC	20	17.9	18	32.1
MS	1	25.3	1	49.6
PA	33	15.3	36	24.1
OH	17	18.6	19	31.8
MO	15	19.7	16	32.9
NH	44	13.7	46	20.6
VT	50	11.9	50	17.2



WA	40	14.6	40	23.2
HI	37	14.8	37	23.8
NV	4	22.2	9	37.5
AK	22	17.6	27	26.4
RI	27	16.5	26	26.7
IN	18	18.4	20	31.5
KS	30	15.8	28	26.3
WV	2	23.0	5	38.5
NM	5	22.0	3	38.6
TX	9	20.6	15	34.7
ID	25	17.0	21	30.2
MN	49	12.0	49	18.1
AR	6	21.8	2	39.2
OK	3	22.7	10	37.3
ME	31	15.5	35	24.1
KY	13	20.4	13	36.5
NE	47	12.7	45	20.7
UT	43	13.8	38	23.8
MT	34	15.2	34	24.2
WI	48	12.5	44	21.0
IA	38	14.8	42	22.9
ND	51	11.6	51	16.7
SD	46	12.8	48	19.7
WY	24	17.0	29	26.0

**Table 3: Selected 2010 Summary Statistics**

Variable	Mean	Std. Dev.	Min	Max
<b>Median income</b>	51,453	7,741	39,363	68,735
<b>Age &lt; 25</b>	0.337	0.022	0.293	0.430
<b>Age 25-44</b>	0.260	0.013	0.236	0.285
<b>Asian</b>	0.0369	0.055	0.006	0.381
<b>Black</b>	0.101	0.095	0.004	0.369
<b>Hispanic</b>	0.106	0.100	0.012	0.464
<b>Other</b>	0.025	0.039	0.010	0.287
<b>High school Graduate</b>	0.894	0.033	0.820	0.949
<b>College Graduate</b>	0.292	0.052	0.193	0.424
<b>Unemployment</b>	0.087	0.020	0.038	0.138
<b>Interest Cap</b>	0.068	0	0.068	0.068
<b>Cost of living adjustment</b>	1.02	0.10	0.88	1.35
<b>State aid that is need-based</b>	0.704	0.344	0.001	1
<b>State support per FTE</b>	6,958	2,414	3,544	16,119
<b>Education Mix Index</b>	1.01	0.08	0.85	1.26
<b>Tuition and fees (\$)</b>	7,248	2,147	3,333	12,459
<b>Total enrollment</b>	315,296	343,279	22,367	1,931,460
<b>Public four year</b>	0.442	0.146	0.172	0.935
<b>Private four-year nonprofit</b>	0.177	0.120	0	0.541
<b>Private four-year for-profit</b>	0.063	0.096	0	0.507
<b>Public two year</b>	0.3	0.125	0	0.611
<b>Private two-year nonprofit</b>	0.002	0.003	0	0.011
<b>Private two-year for-profit</b>	0.015	0.014	0	0.051
<b>Public enrollment</b>	0.742	0.132	0.442	0.96

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<b>Two-year enrollment</b>	0.318	0.127	0.02	0.66
<b>For-profit enrollment</b>	0.079	0.097	0	0.528
<b>Within-state freshmen ratio</b>	0.788	0.115	0.498	0.928
<b>Average age of borrowers</b>	35.67	0.622	34.00	37.42
<b>Average risk score of borrowers</b>	641	21.08	592	679
<b>Average student loan balance</b>	20,743	1715	17,149	24,623

**Table 4: Fixed Effect Models for Student Loan Balance and Delinquencies**

VARIABLES	Log (average balance)	Total Delinquency		Delinquency in Repayment	
		Of all balance	Of all borrowers	In terms of balance	In terms of borrowers
Percent age 25 and younger	2.959** (1.279)	0.314 (0.440)	0.135 (0.612)	1.879** (0.759)	0.362 (0.881)
Log (average balance)		-0.0204 (0.0169)	-0.0390 (0.0268)	0.0121 (0.0445)	-0.0544 (0.0530)
Average age of borrowers	-0.0167 (0.0153)	0.00648*** (0.00231)	0.00894*** (0.00292)	0.00984* (0.00510)	0.0173*** (0.00605)
Average risk score of borrowers	-0.000303 (0.000949)	-0.00153*** (0.000302)	-0.00258*** (0.000380)	-0.00449*** (0.000728)	-0.00544*** (0.000761)
Percent Asian	-0.277 (0.982)	-0.460** (0.209)	-0.807*** (0.254)	-0.726* (0.432)	-0.787** (0.380)
Percent black	-0.0225 (1.969)	-0.339 (0.264)	-0.373 (0.440)	0.217 (0.681)	0.324 (0.968)
Percent Hispanic	-0.892 (0.566)	0.539*** (0.103)	0.535*** (0.148)	0.399** (0.198)	0.223 (0.274)
Percent other	-0.693 (0.670)	-0.181 (0.149)	-0.306 (0.186)	-0.264 (0.284)	-0.309 (0.368)
Percent college graduates	-0.134* (0.0792)	-0.0454** (0.0223)	-0.0335 (0.0320)	-0.0768 (0.0548)	0.0108 (0.0659)
Log (median income)	-0.0114 (0.0448)	0.00896 (0.00862)	0.0153 (0.0111)	-0.0286 (0.0272)	-0.0191 (0.0289)
Unemployment rate	-0.653** (0.297)	-0.0790 (0.102)	-0.167 (0.128)	-0.166 (0.212)	-0.352* (0.196)
Log (tuitions and fees)	0.00290 (0.0429)	0.000795 (0.00823)	-0.00570 (0.0115)	0.0200 (0.0162)	0.0127 (0.0217)
Log (state support for higher education)	-0.0226 (0.0396)	0.00643 (0.00613)	0.0182 (0.0116)	0.0183 (0.0175)	0.0393** (0.0191)
Log (aid per FTE)	-0.0152*** (0.00520)	0.00301 (0.00263)	0.00241 (0.00382)	0.00350 (0.00390)	0.000653 (0.00548)
Percent aid need- based	-8.81e-05 (0.0126)	-0.000326 (0.00457)	0.00111 (0.00593)	-0.000999 (0.00716)	0.00845 (0.00779)
Percent public enrollment	-0.0267 (0.189)	0.0883 (0.0621)	0.110 (0.0686)	-0.00685 (0.112)	0.0652 (0.114)
Percent 2-year enrollment	0.0788 (0.0774)	-0.0292 (0.0177)	-0.0267 (0.0236)	-0.0798*** (0.0267)	-0.0517 (0.0330)
Percent for-profit enrollment	0.0324 (0.169)	0.0575 (0.0583)	0.0800 (0.0621)	-0.0887 (0.106)	0.0216 (0.101)
Constant	9.709*** (1.327)	0.687** (0.287)	1.438*** (0.455)	1.934** (0.765)	3.192*** (0.781)
Observations	438	438	438	438	438
R-squared	0.984	0.785	0.808	0.726	0.696
Number of states	50	50	50	50	50

Controlling for both state and year fixed effects;

Robust standard errors in parentheses; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1