



UNIVERSITY SYSTEM OF GEORGIA



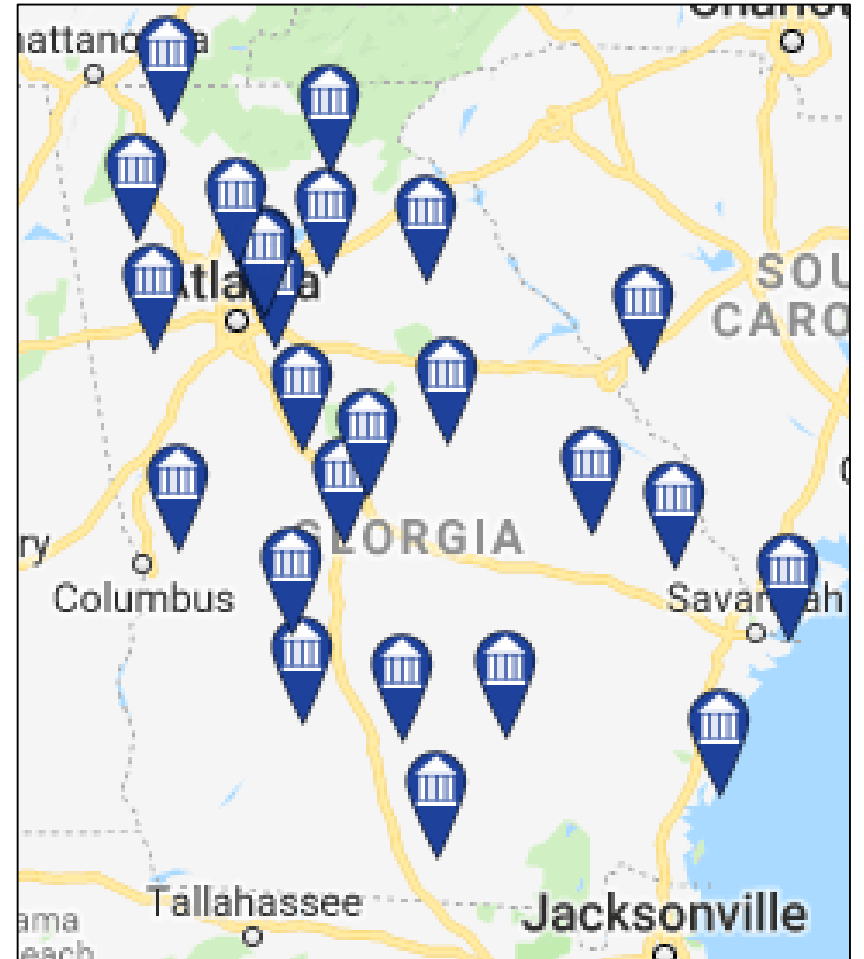
Paying for College: Employment & Borrowing in Response to Financial Aid Shifts

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University System of Georgia

- 26 public, four-year universities and colleges
 - 4 Research Universities
 - 4 Comprehensive Universities
 - 9 State Universities
 - 9 State Colleges
- Does not include community colleges or technical colleges
- 328,000+ students in Fall 2018
- 66,000+ credentials in FY 2018



HOPE Scholarship

- First lottery-funded merit scholarship in US in 1993
- Provided more than \$10 billion in aid to more than 1.8 million students
- Several requirement changes over time. We focus on stricter eligibility requirements to receive full tuition award starting with Fall 11 cohort

Key Requirement Changes to HOPE Scholarship

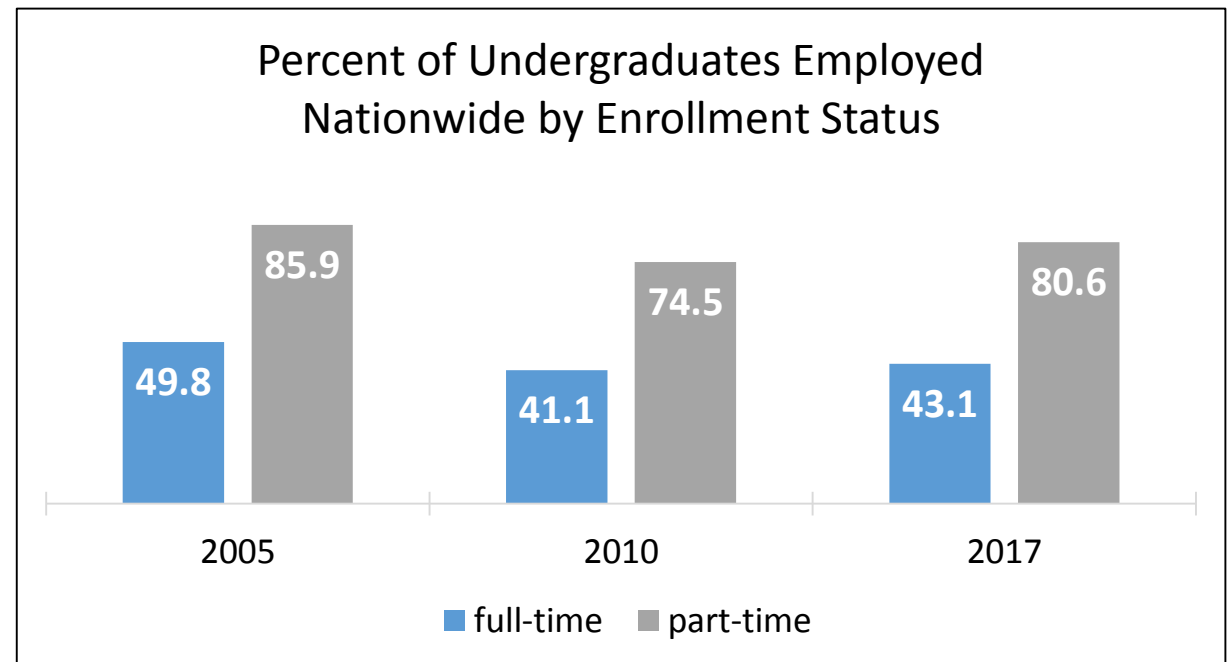
	Name	HS HOPE GPA	College GPA	SAT/ACT	Tuition Covered
2007-Summer 2011	HOPE	≥ 3.0	≥ 3.0	NA	100%
Fall 2011-Present	HOPE	≥ 3.0	≥ 3.0	NA	70-90%
	ZELL	≥ 3.7	≥ 3.3	SAT: ≥ 1200 ACT: ≥ 26	100%

See <https://gsfc.georgia.gov/> for comprehensive list of requirement changes.



Student Employment Trends

- Working while in school has become commonplace among postsecondary students
 - 43% of full-time undergraduates were employed in 2017 (81% of part-time students)
 - Employment rates among undergraduates have increased since 2010, but have not returned to pre-recession levels
 - Similar employment rates are observed among USG undergraduates

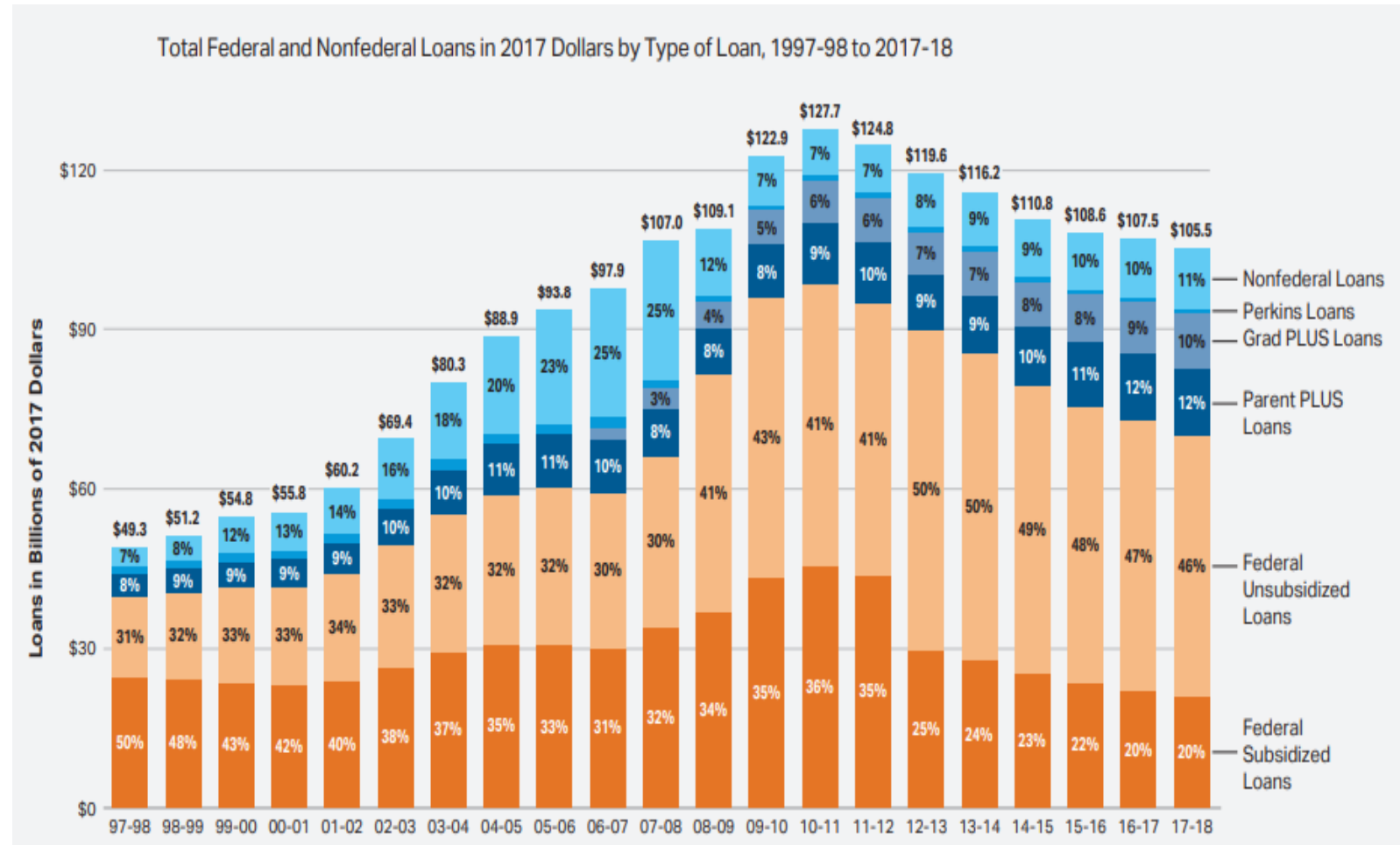


Source: NCES Digest of Education 2018 Table 503.40



Student Borrowing Trends

- In 2016-17 **30%** of undergraduates borrowed an average of **\$6,590** in federal loans (excluding PLUS)
 - Down from 37% borrowing \$6,970 on average in 2012-13
- Among USG undergraduates, **46%** borrowed an average of **\$6,266** in federal loans in 2016-17(excluding PLUS)
 - Down from 51% borrowing \$6,515 on average in 2012-13



Source: College Board Trends in Student Aid 2018



Research Questions

- How did requirement and funding changes in GA's HOPE scholarship impact **employment** while in school?
- How did HOPE funding changes impact **borrowing behavior**?
 - Likelihood of borrowing
 - Amount borrowed
- Does policy have differential impact over time?



Data

- Statewide Longitudinal Data System
 - GA's Academic and Workforce Analysis and Research Data System (GA•AWARDS)
 - PreK-12 → Post-Secondary → Workforce
- Study Sample & Variables of Interest
 - Students with HS Hope GPA of 3.0 and above
 - First two semesters of enrollment and financial aid for entering cohorts 2007-2015
 - Quarterly employment data for first two semesters of enrollment
 - Key variables: demographics, employment, borrowing information, eligibility and receipt of HOPE/Zell
 - Outcomes: Employed during first year, borrowing in the first year, amount borrowed



Methodology: Difference-in-Difference

$$y_{ist} = \beta_0 + \beta_1 Treated_{ist} + \beta_2 Post_{ist} + \beta_3 Treated_{ist} * Post_{ist} + \beta_4 X_{ist} + \tau_s + e_{ist}$$

X_{ist} =Age, Race, Sex, Pell Receipt, Free/Reduced Lunch, HS Hope GPA

Cohorts	Treated	Control
Fall 2007-2010	<p>HOPE recipients not eligible for Zell</p> <p>HS Hope GPA ≥ 3.0 100% tuition</p>	<p>HOPE recipients also eligible for Zell</p> <p>HS Hope GPA ≥ 3.7 SAT/ACT $\geq 1200/26$ 100% tuition</p>
Fall 2011-2015	<p>HOPE recipients not eligible for Zell</p> <p>HS Hope GPA ≥ 3.0 <u>70-90% tuition</u></p>	<p>Zell recipients</p> <p>HS Hope GPA ≥ 3.7 SAT/ACT $\geq 1200/26$ 100% tuition</p>

Controls for baseline differences across treated and control groups, and the (shared) factors which influence outcomes over time



Table 1. Descriptive Statistics & Difference in Means for Treated and Control Groups

Variable	All students (At Least HOPE)	Treated (HOPE only)	Control (Eligible for Zell)	Difference
<i>Outcomes</i>				
% employed	40.6%	40.6%	40.5%	
% taking out loans (any)	40.7%	42.2%	31.1%	***
% taking out loans (federal)	40.5%	42.0%	30.8%	***
Loan amount among borrowers (any)	2,065.9	2,135.4	1,626.0	***
Loan amount among borrowers (federal)	1,974.8	2,046.9	1,518.3	***
Credit hours attempted	27.3	27.0	29.0	***
<i>Student Characteristics</i>				
HS HOPE GPA	3.49	3.43	3.89	***
SAT	1075	1034	1294	***
ACT	23	22	29	***
Age	18.4	18.4	18.4	***
Hispanic/Latino	5.8%	6.1%	4.1%	***
Asian	6.0%	5.2%	10.8%	***
African Am./Black	18.4%	20.6%	4.0%	***
White	64.2%	62.3%	76.3%	***
Other race	5.6%	5.7%	4.8%	***
Female	60.6%	61.3%	56.3%	***
Free/reduced lunch	27.9%	30.2%	12.7%	***
Pell recipient	16.8%	18.4%	7.3%	***
<i>USG Sector</i>				
Research Universities	36.2%	29.2%	80.2%	***
Comprehensive Universities	28.4%	31.4%	9.8%	***
State Universities	22.5%	24.8%	7.9%	***
State Colleges	12.9%	14.6%	2.1%	***
N	207,814	179,449	28,365	

Notes: * p < 0.05; ** p < 0.01; *** p < 0.001

Table 2. Regression Results Estimating the Impact of Scholarship Changes on Likelihood of Working in the First Year

Variables	Model 1	Model 2	Model 3	Model 4
Treat X Post	0.0884*** (13.74)	0.0839*** (13.12)	0.0727*** (11.37)	0.0705*** (6.85)
Treat	-0.0406*** (-7.87)	-0.0299*** (-5.82)	-0.0205*** (-3.98)	-0.0535*** (-12.05)
Post	0.112*** (18.64)	0.118*** (19.79)	0.106*** (17.66)	0.103*** (8.52)
Age		0.00435* (2.30)	0.00449* (2.38)	0.00442* (2.61)
Female		-0.0291*** (-13.45)	-0.0279*** (-12.87)	-0.0259*** (-6.12)
Asian		-0.151*** (-33.58)	-0.147*** (-32.44)	-0.152*** (-36.32)
African Am./Black		-0.0744*** (-26.29)	-0.0697*** (-22.43)	-0.0656*** (-9.41)
Hispanic/Latino		-0.0392*** (-8.61)	-0.0391*** (-8.42)	-0.0507*** (-5.61)
Other race		-0.163*** (-35.22)	-0.160*** (-34.47)	-0.165*** (-17.50)
Free/reduced lunch			0.0258*** (9.39)	0.0240** (3.58)
Pell recipient			-0.0828*** (-26.44)	-0.0831*** (-13.57)
HOPE GPA				-0.0292*** (-4.18)
N	207814	207814	207814	207813
R-squared	0.04	0.05	0.05	0.06
Institution Fixed Effects	NO	NO	NO	YES

Notes: * p < 0.05; ** p < 0.01; *** p < 0.001

Table 3. Regression Results Estimating the Impact of Scholarship Changes on Borrowing Behavior in the First Year

	Likelihood of Borrowing	Amount Borrowed
Treat X Post	0.0728*** (5.73)	360.0** (3.01)
Treat	-0.00745 (-0.71)	-152.7* (-2.14)
Post	0.0633*** (5.31)	757.7*** (7.37)
Age	-0.00407 (-0.85)	-0.955 (-0.05)
Female	0.0276*** (6.27)	109.1*** (4.21)
Asian	-0.0959*** (-4.20)	-489.4*** (-17.10)
African Am./Black	0.259*** (27.17)	516.4*** (10.14)
Hispanic/Latino	-0.0226 (-1.03)	-29.07 (-0.63)
Other race	0.0574*** (5.52)	98.03** (2.80)
Free/reduced lunch	0.0847*** (4.16)	-22.75 (-0.46)
Pell recipient	0.0661*** (3.90)	-518.7*** (-6.46)
HOPE GPA	-0.0651** (-3.59)	-160.7* (-2.50)
N	207813	84616
R-squared	0.14	0.12
Institution Fixed Effects	YES	YES

Notes: * p < 0.05; ** p < 0.01; *** p < 0.001

Robustness Check: Lead-Lag

Using the fully specified models, we replace the post indicator with a series of time dummy variables before and after treatment and interact with treated indicator

- Allows us to test the parallel trends assumption
- Shows short and long-term policy effects
- Reference group is the year before policy implementation (2010)



Table 4. Lead-Lag Regression Results

	Likelihood of working	Any Borrowing	Amount Borrowed
Treat X 2007 ind	-0.0412 (-1.99)	-0.0487** (-2.85)	-1199.6*** (-9.12)
Treat X 2008 ind	-0.0622*** (-5.03)	-0.0331* (-2.35)	-1092.5*** (-8.53)
Treat X 2009 ind	0.00558 (0.67)	-0.0229 (-1.64)	-599.7*** (-6.13)
Treat X 2011 ind	0.0742* (2.11)	0.0260 (1.13)	-196.5 (-1.93)
Treat X 2012 ind	0.0494* (2.51)	0.0443** (3.37)	-302.4 (-1.78)
Treat X 2013 ind	0.0415*** (3.71)	0.0646*** (4.30)	-336.2 (-1.84)
Treat X 2014 ind	0.0752*** (3.77)	0.0463** (3.18)	-244.9 (-1.38)
Treat X 2015 ind	0.0860*** (3.87)	0.0519* (2.15)	-328.4* (-2.26)
N	210328	210328	85172
R-squared	0.07	0.14	0.13
Institution Fixed Effects	YES	YES	YES
Control Variables	YES	YES	YES

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; the coefficients presented are for the interaction of the treatment indicator and the year dummy variables before and after the policy implementation; 2010 is the omitted year.

Methodology: Triple Difference

We use out-of-state students who are not eligible to receive Hope/Zell in any year as an additional comparison group.

- Same benefits as Diff-in-Diff
- Additionally controls for factors which influence treated and control groups differentially over time
- Limitations: identifying eligible students with non-HOPE GPA and comparability of out-of-state students

$$y_{ist} = \beta_0 + \beta_1 Treated_{ist} + \beta_2 Post_{ist} + \beta_3 Out\ of\ State_{ist} + \beta_4 Treated_{ist} * Post_{ist} + \beta_5 Treated_{ist} * Out\ of\ State_{ist} + \beta_6 Out\ of\ State_{ist} * Post_{ist} + \beta_7 Treated_{ist} * Post_{ist} * Out\ of\ State_{ist} + \beta_4 X_{ist} + \tau_s + e_{ist}$$



Table 5. Difference in Difference in Difference Regression Results

	Likelihood of working	Any Borrowing	Amount Borrowed
Treat X Post X Out-of-State	0.123** (3.07)	0.00154 (0.04)	64.02 (0.18)
Treat	-0.0503*** (-12.24)	-0.00682 (-0.72)	-149.4* (-2.06)
Post	0.103*** (8.49)	0.0638*** (5.35)	758.4*** (7.38)
Out-of-State	-0.145*** (-7.95)	-0.134*** (-5.52)	643.3 (1.40)
Treat X Post	0.0705*** (6.86)	0.0731*** (5.75)	360.1** (3.00)
Treat X Out-of-state	0.00986 (0.40)	0.00401 (0.15)	-39.97 (-0.09)
Out-of-State X Post	-0.121*** (-4.14)	-0.0718* (-2.37)	-362.3 (-0.76)
N	210328	210328	85172
R-squared	0.06	0.14	0.12
Institution Fixed Effects	YES	YES	YES
Control Variables	YES	YES	YES

Notes: * p < 0.05; ** p < 0.01; *** p < 0.001.

Conclusion & Implications

- Relative to full scholarship recipients, students not eligible for a full scholarship:
 - are 7-8 percentage points more likely to work in the first two terms of enrollment
 - are 7 percentage points more likely to borrow
 - and borrow \$360 more on average
- Results are robust to lead-lag analyses and triple difference estimates in most cases.
- USG administrators and policymakers are making efforts to accommodate working students:
 - Block schedules and flexible courses (evening courses, online courses via eCore and eCampus)
 - Integrating work-based learning experiences into the curriculum via High Impact Practices
- Know More Borrow Less initiative seeks to educate students on their borrowing to-date and expected payments upon graduation to improve borrowing decisions.



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