

The Impact of Tuition Increases on Undocumented College Students' Attainment

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Motivation

- Rising costs in U.S. higher education
 - Both sticker and net prices
 - Robust evidence that decreases in effective prices \Rightarrow increase in college enrollment (Deming & Dynarski 2010)
 - Less evidence on whether price shocks affect attainment of students after enrollment decision

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- Rising costs in U.S. higher education
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 - Robust evidence that decreases in effective prices => increase in college enrollment (Deming & Dynarski 2010)
 - Less evidence on whether price shocks affect attainment of students after enrollment decision
- Disparate outcomes by student income
 - Gaps in college attendance have shrunk (Bailey & Dynarski 2011)
 - Low and decreasing degree completion, especially for lower-income students (Bound, Lovenheim, Turner 2010)

Overview

- Estimate impact of a one-semester price shock on short and longer-run attainment
 - Reenrollment, credits earned, degree receipt
- Undocumented students within the City University of New York (CUNY) System
- Generalized differences-in-differences id strategy
 - Compare changes in outcomes of documented and undocumented immigrants following policy change

U.S Policy on Undocumented Youth

- Approximately 4.4 million under age of 30
- Development, Relief, and Education for Alien Minors (DREAM) Act
 - Path to citizenship for youth who earn college degree
 - Voted down in 2001, 2007, and 2010
- Deferred Action for Childhood Arrivals (DACA) Program
 - Shields some undocumented youth from deportation
 - Temporary work authorization
 - Executive order passed in 2012
- State legislation extending in-state tuition benefits to undocumented public college students

States offering In-State Tuition for Undocumented

<u>State</u>	<u>Year</u>	<u>State</u>	<u>Year</u>
Texas	2001	Maryland	2011
California	2002	Connecticut	2011
New York	2002	Rhode Island	2011
Utah	2002	Colorado	2013
Illinois	2003	Minnesota	2013
Oklahoma	2003	New Jersey	2013
Washington	2003	Oregon	2013
Kansas	2004	Florida	2014
New Mexico	2005		
Nebraska	2006		

What Do We Know about Undocumented College Students?

- Substantial obstacles to normal college life and pursuits
 - Abrego (2006); Perez (2009); Gonzalez (2011)
- Undocumented CUNY students earn higher GPAs and more credits than similar US citizens
 - Conger & Collin (2013)
- In-state tuition subsidy for undocumented increases enrollment of Mexican non-citizens
 - Kaushal (2008); Flores (2010), Chin & Juhn (2011); Darolia & Potochnick (2014)

What Do We Know about Price Effects on Attainment?

- Decreases in sticker price increase enrollment
 - \$1000 ↓ in price: 2-4 pp ↑ in attendance (Deming & Dynarski 2010)
 - Increases in grant aid have similar effects (with clear information, uncomplicated application process)

What Do We Know about Price Effects on Attainment?

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 - Increases in grant aid have similar effects (with clear information, uncomplicated application process)
- Performance-based aid raises enrolled students' attainment
 - Dynarski (2008); Angrist, Lang, Oreopoulos (2009); Scott-Clayton (2011); Patel & Rudd (2012); Angrist, Lang, Williams (2014); Barrow et al. (2014)
 - Difficult to disentangle price effects from other supports, conditionality of payments

What Do We Know about Price Effects on Attainment?

- Need-based grant aid increases attainment of enrolled students when not offset by reductions in other aid
 - E.g., Goldrick-Rab et al. (2012), Marx and Turner (2014)
 - Only U.S. citizens and permanent residents eligible for federal/state grants and loans

What Happened in NYC?

- 1989: Mayor Koch extends in-state tuition rates to eligible undocumented attending NY state colleges
- Fall 2001: CUNY chancellor announces end to the policy
- Spring 2002: Rates for undocumented students more than double at senior colleges, increase by 23% at ccs
- Fall 2002: In-state rates restored by NYS legislature

The CUNY System and Students

- Largest public university system in the U.S.
 - 17 community and senior colleges
 - ~250,000 degree-seeking undergraduates/year
- Low costs, limited institutional aid
 - Community college tuition = \$2,500/year (\$2,800/year oos)
 - Senior college tuition = \$3,200/year (\$5,000/year oos)

Sample and Key Variables

- First-time, degree-seeking entrants (Fall 1999 - Fall 2001)
- Restricted to noncitizen NYS high school graduates
- Tracked from Fall 2000 through Fall 2004
- Persistence, credits, GPA, degree receipt
- Immigration status
 - US Citizen
 - Permanent Resident
 - Visa Holder
 - Refugee
 - Undocumented

Empirical Framework: Generalized DD

- Compare changes in outcomes of documented and undocumented students following price increase
- Identifying assumption: trends in outcomes would have been similar in absence of policy change

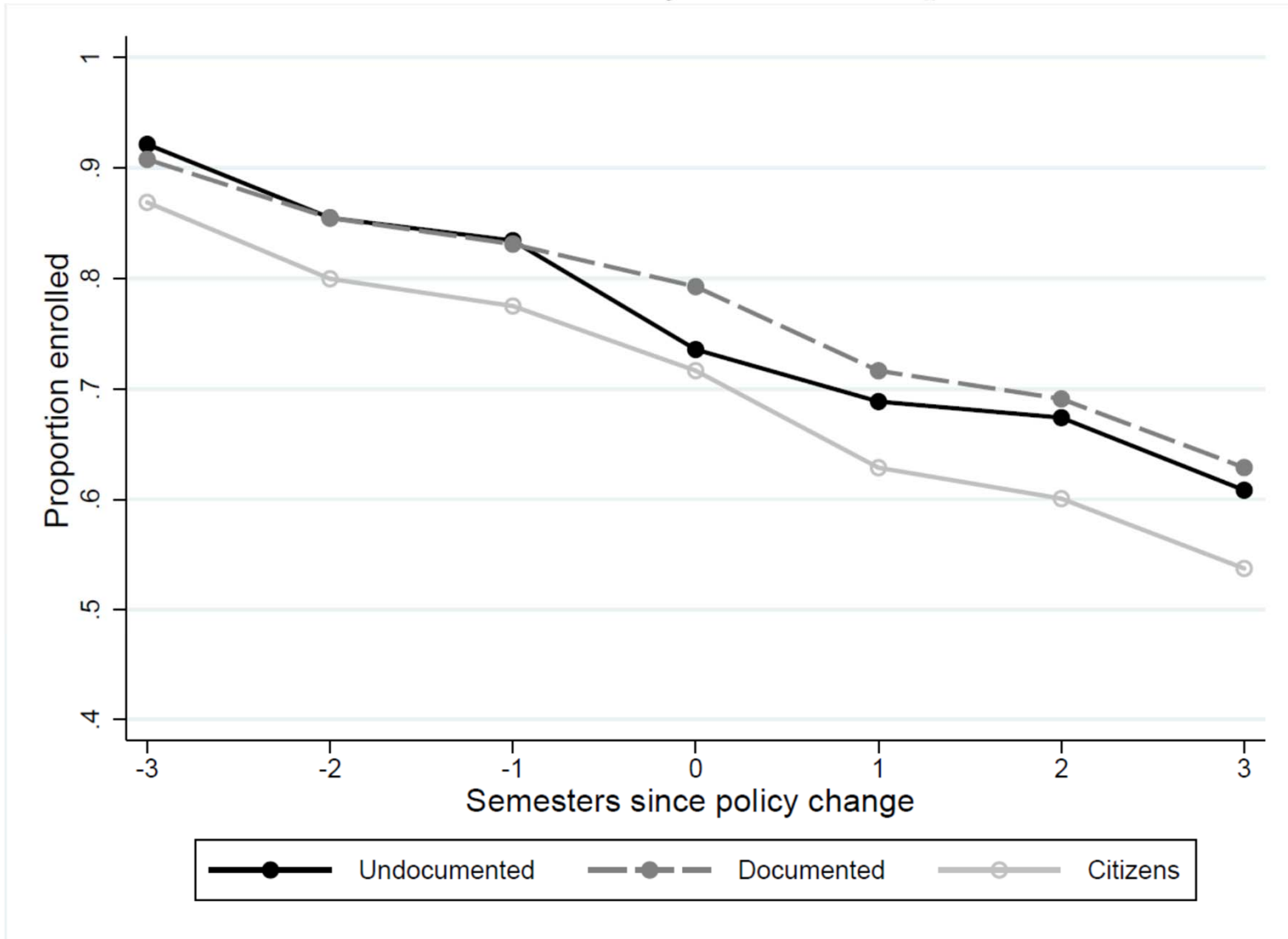
Empirical Framework: Generalized DD

$$Y_{icst} = \beta_1 Treat_t \times Undoc_i + \beta_2 Post_t \times Undoc_i \\ + \gamma \mathbf{X}_i + \delta_{sc} + \delta_t + \tau \times \delta_c + \epsilon_{isct}$$

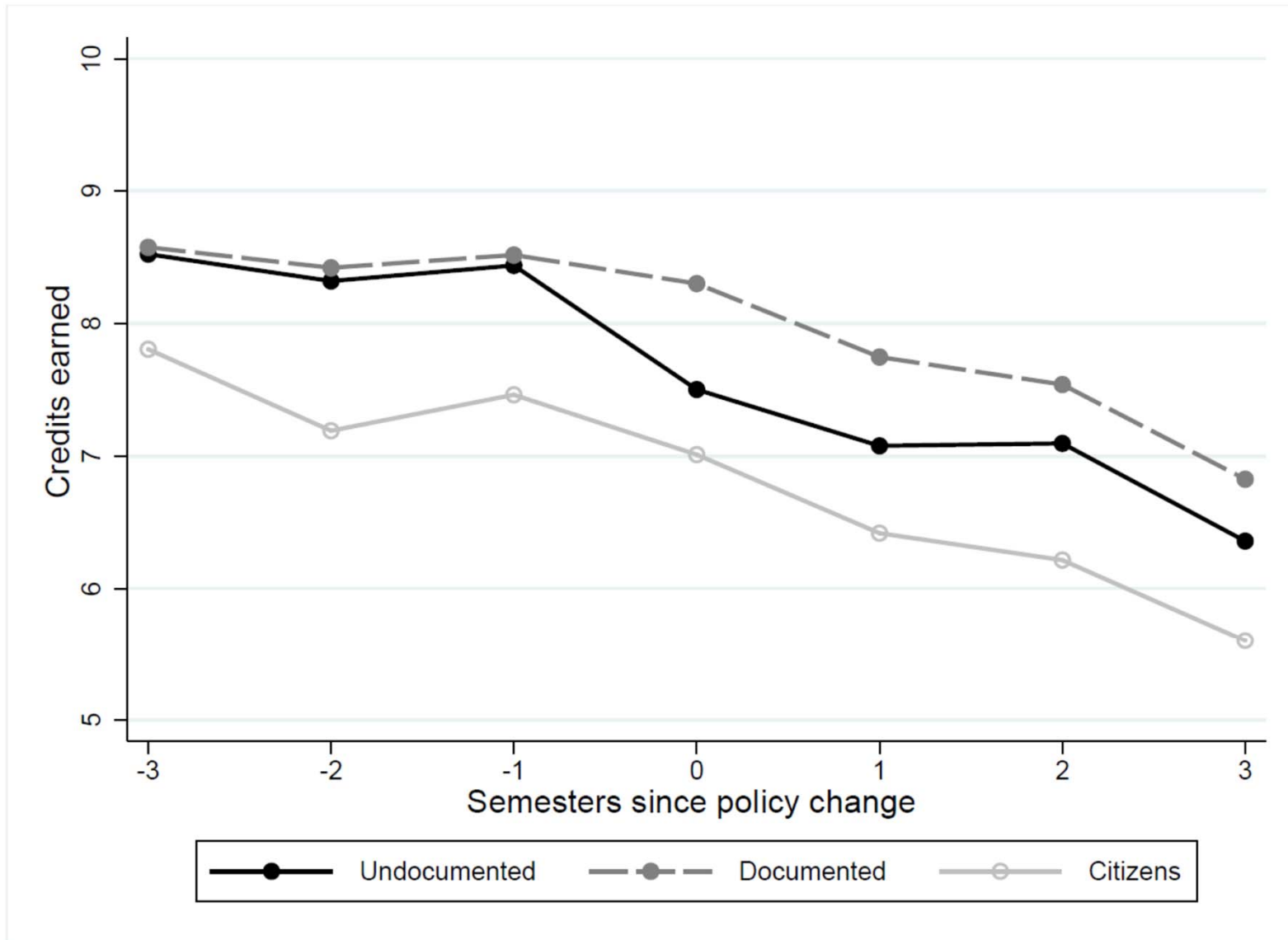
Where:

- Y_{icst} is outcome of student i , from cohort c , attending school s , t semesters before/after the policy change
- $Treat_t = \mathbf{1}[\text{Spring 2002}]$, $Post_t = \mathbf{1}[\text{Post-Spring 2002}]$
- \mathbf{X}_i is a vector of student characteristics
- College by cohort, semesters since policy change FE
- Cohort-specific linear time trends ($\tau = t - c$)

Reenrollment by Semester, Citizenship, and Documentation: Senior College Students



Credits Earned by Semester, Citizenship, and Documentation: Senior College Students



Impacts on Reenrollment: Senior College Students

	(1) All	(2) Bachelor's degree seeking	(3) Associate degree seeking
Undocumented × spring 2002	-0.065 (0.012)**	-0.071 (0.014)**	-0.054 (0.020)*
Undocumented × post-spring 2002	-0.029 (0.013)*	-0.042 (0.015)**	0.001 (0.022)
Observations	61,481	38,674	22,807

Impacts on Reenrollment: Senior College Students

	(1) All	(2) Bachelor's degree seeking	(3) Associate degree seeking
Undocumented × spring 2002	-0.065 (0.012)**	-0.071 (0.014)**	-0.054 (0.020)*
Undocumented × post-spring 2002	-0.029 (0.013)*	-0.042 (0.015)**	0.001 (0.022)
Test of equality (<i>p</i> - value)	0.005	0.007	0.070
Fall 2001 undocumented mean	0.83	0.88	0.77
Impact in % change: spring 2002	-8%	-8%	-7%
Impact in % change: post-spring 2002	-3%	-5%	0.1%
Observations	61,481	38,674	22,807

Impacts on Credits Attempted: Senior College Students

	(1) All	(2) Bachelor's degree seeking	(3) Associate degree seeking
Undocumented × spring 2002	-0.913 (0.176)**	-0.912 (0.226)**	-0.914 (0.299)**
Undocumented × post-spring 2002	-0.547 (0.180)**	-0.494 (0.213)*	-0.637 (0.346)+
Test of equality (<i>p</i> - value)	0.033	0.048	0.273
Fall 2001 undocumented mean	9.4	10.5	7.5
Impact in % change: spring 2002	-10%	-9%	-12%
Impact in % change: post-spring 2002	-6%	-5%	-8%
Observations	61,481	38,674	22,807

Impacts on Credits Earned: Senior College Students

	(1) All	(2) Bachelor's degree seeking	(3) Associate degree seeking
Undocumented × spring 2002	-0.763 (0.159)**	-0.862 (0.228)**	-0.603 (0.221)*
Undocumented × post-spring 2002	-0.511 (0.156)**	-0.469 (0.180)*	-0.586 (0.297)+
Test of equality (<i>p</i> - value)	0.165	0.077	0.950
Fall 2001 undocumented mean	8.4	9.6	6.6
Impact in % change: spring 2002	-9%	-9%	-9%
Impact in % change: post-spring 2002	-6%	-5%	-9%
Observations	61,481	38,674	22,807

Threats to Identification & Robustness Tests

- Policy change/September 11th attacks had “chilling effect”
 - Compare undocumented and documented noncitizens to citizens (similar to DDD)
 - No significant impacts of policy change on documented immigrants’ attainment
- Estimates robust to additional specifications
 - Student fixed effects
 - Conditioning on enrollment in Fall 2001
 - Larger window around policy change (+/- 4 semesters)
 - Smaller window around policy change (+/- 2 semesters)

Heterogeneity by Gender and Race/Ethnicity

- Similar impacts on male and female students' outcomes
 - One exception: significantly larger impacts on male community college students' enrollment (5 pp decrease vs. no impact)
- Impacts on Hispanic students attainment larger
 - Not statistically distinguishable from impacts on non-Hispanic undocumented

Heterogeneity by Cohort

	(1) 1999	(2) 2000	(3) 2001	Test of eq. (<i>p</i> - value)
<i>A. Reenrollment</i>				
Undocumented × spring 2002	-0.033 (0.020)	-0.073 (0.020)**	-0.084 (0.018)**	0.132
Undocumented × post-spring 2002	-0.002 (0.022)	-0.009 (0.022)	-0.073 (0.018)**	0.013
Test of equality (<i>p</i> - value)	0.119	0.011	0.549	
Fall 2001 undocumented mean	0.68	0.79	1.00	
Impact in % change: spring 2002	-5%	-9%	-8%	
Impact in % change: post-spring 2002	-0.3%	-1%	-7%	
Observations	21,586	24,539	15,356	

Impacts on Longer-Run Outcomes

- Compare changes in outcomes of 2000 and 2001 undocumented cohorts (relative to 1999 cohort) to changes in outcomes of documented cohorts
 - Cumulative credits, degree receipt 8 years after entry

$$Y_{isc} = \alpha_{2000}Undoc_i \times \mathbf{1} [cohort = 2000] + \alpha_{2001}Undoc_i \times \mathbf{1} [cohort = 2001] + \eta X_i + \psi_{sc} + \nu_{isc}$$

- *Relative* effect of price shock for later (more exposed?) cohorts

Impacts on Long-Run Attainment: Senior College Students

	<u>Degree Receipt:</u>			
	1. Cumulative credits earned	2. Any degree	3. AA/AS	4. BA/BS
<i>A. All senior college students</i>				
Undocumented × 2000 entrant	-2.37 (3.69)	-0.030 (0.047)	-0.001 (0.026)	-0.020 (0.041)
Undocumented × 2001 entrant	-7.01 (3.08)*	-0.104 (0.047)*	-0.042 (0.028)	-0.086 (0.043)+
Undocumented mean (1999)	73.9	0.48	0.13	0.40
Impact in % change: 2000 cohort	-3%	-6%	-1%	-5%
Impact in % change: 2001 cohort	-9%	-22%	-32%	-22%
Observations	9,798	9,798	9,798	9,798

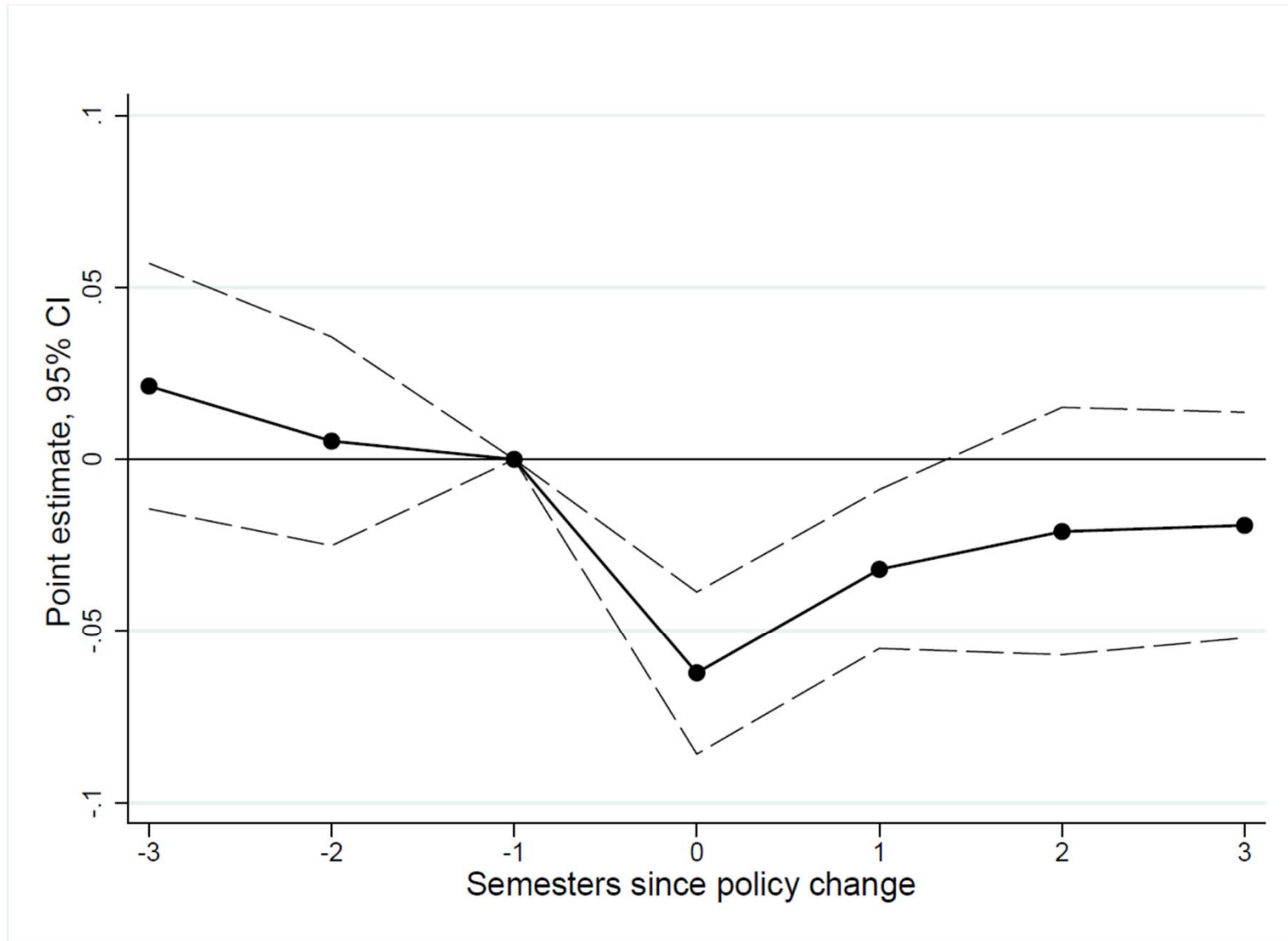
Policy Implications

- Price reductions can increase low-income students' persistence and degree receipt when credit constrained
- Impacts on welfare depend on private, social returns to educational attainment for undocumented youth
 - “DACA-mented” recently received temporary authorization to work
 - Increased civic engagement (Dee, 2004; Milligan, Moretti, Oreopolous, 2004); intergenerational transmission of human capital (Currie and Moretti, 2003)

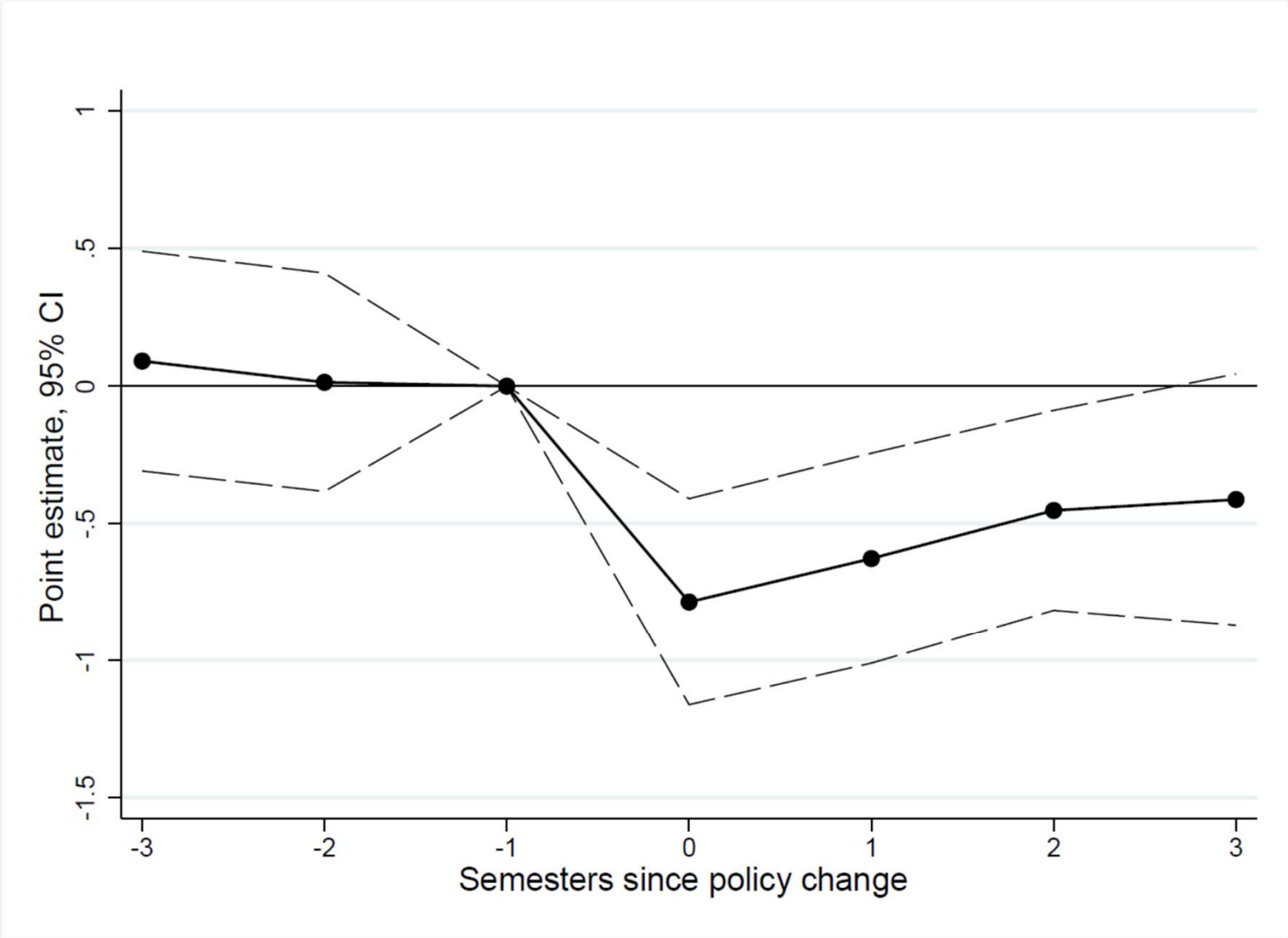
Thank you!

Bonus Slides

Impacts on Reenrollment: Senior College Students



Impacts on Credits Earned: Senior College Students



Robustness Tests: Senior College Students

	(1) Student fixed effects	(2) Larger window (+/- 4 semesters)	(3) Smaller window (+/- 2 semesters)
<i>A. Reenrollment</i>			
Undocumented × spring 2002	-0.058 (0.013)**	-0.064 (0.012)**	-0.060 (0.011)**
Undocumented × post-spring 2002	-0.019 (0.015)	-0.024 (0.014)+	-0.024 (0.014)+
Test of equality (<i>p</i> -value)	0.007	0.006	0.006
Fall 2001 undocumented mean	0.83	0.83	0.83
Impact in % change: spring 2002	-7%	-8%	-7%
Impact in % change: post-spring 2002	-2%	-3%	-3%
Observations	61,481	73,768	45,777
<i>B. Credits earned</i>			
Undocumented × spring 2002	-0.673 (0.170)**	-0.738 (0.166)**	-0.737 (0.165)**
Undocumented × post-spring 2002	-0.378 (0.187)*	-0.412 (0.156)*	-0.497 (0.161)**
Test of equality (<i>p</i> -value)	0.141	0.082	0.212
Fall 2001 undocumented mean	8.4	8.4	8.4
Impact in % change: spring 2002	-8%	-9%	-9%
Impact in % change: post-spring 2002	-5%	-5%	-6%
Observations	61,481	73,768	45,777

Heterogeneity in the Impact of the Tuition increase by Student Gender

	(1) Female	(2) Male	Test of equality (<i>p</i> -value)
<i>A. Reenrollment</i>			
Undocumented × spring 2002	-0.073 (0.016)**	-0.054 (0.018)**	0.447
Undocumented × post-spring 2002	-0.035 (0.016)*	-0.020 (0.019)	0.515
Fall 2001 undocumented mean	0.84	0.83	
Observations	35,290	26,191	
<i>B. Credits earned</i>			
Undocumented × spring 2002	-0.881 (0.209)**	-0.591 (0.280)*	0.422
Undocumented × post-spring 2002	-0.548 (0.172)**	-0.457 (0.262)+	0.757
Fall 2001 undocumented mean	8.9	7.9	
Observations	35,290	26,191	

Heterogeneity in the Impact of the Tuition increase by Ethnicity

	(1) Hispanic	(2) Non-hispanic	Test of equality (<i>p</i> - value)
<i>A. Reenrollment</i>			
Undocumented × spring 2002	-0.083 (0.024)**	-0.058 (0.015)**	0.414
Undocumented × post-spring 2002	0.002 (0.031)	-0.037 (0.015)*	0.280
Fall 2001 undocumented mean	0.83	0.84	
Observations	13,189	48,292	
<i>B. Credits earned</i>			
Undocumented × spring 2002	-1.384 (0.318)**	-0.541 (0.189)**	0.025
Undocumented × post-spring 2002	-0.583 (0.346)+	-0.482 (0.176)**	0.799
Fall 2001 undocumented mean	8.1	8.6	
Observations	13,189	48,292	