Affirmative Action Bans and the Chilling Effect

by Kate Antonovics and Rick Sander

Some Background

- What do we mean by affirmative action?
  - Explicit racial preferences in college admissions

- In 1996 California voters approved Proposition 209
  - *The state shall not discriminate against, or grant preferential treatment to, any individual or group on the basis of race, sex, color, ethnicity, or national origin in the operation of public employment, public education, or public contracting.*

  - Implemented starting with the freshman class of 1998.

What is the Chilling Effect?

- General recognition that Prop 209 would lower the proportion of minorities at the UC because of lower admission rates.

- But, there was also concern about a "chilling effect".
  - Minorities would lose interest in attending the University of California because the ban would change the campuses in ways that would make them less attractive to minorities.

- Possible reasons:
  - The ban could connote institutional hostility.
  - Minorities would have fewer own-race peers.

Concern about the Chilling Effect

- Aaliyah Richmond, a high school senior admitted to Berkeley in Spring 1998 commented, ''O.K., they don't want me, I don't want to go there. Their commitment to affirmative action is not there.''

- Carl Williams, a junior at Berkeley in 2004, observed, "The situation is not conducive to Black students coming here…It's difficult as students here to reach out to [prospective minority students] and tell them they'll be welcome with open arms."

- Berkeley's director of black student development, Grace Carroll Massey, remarked in May 1998, "This is the first year I've told students who asked me not to go to Berkeley, but to go to Stanford."

How Do You Study the Chilling Effect?

☒ Enrollment shares: directly influenced by admission rates.

☒ Application rates: also affected by admission rates.

☑ Yield rates: the probability of enrolling conditional on being accepted.

Our basic approach is to study how URM yield rates changed after Prop 209 (1995-1997 vs. 1998-2000).
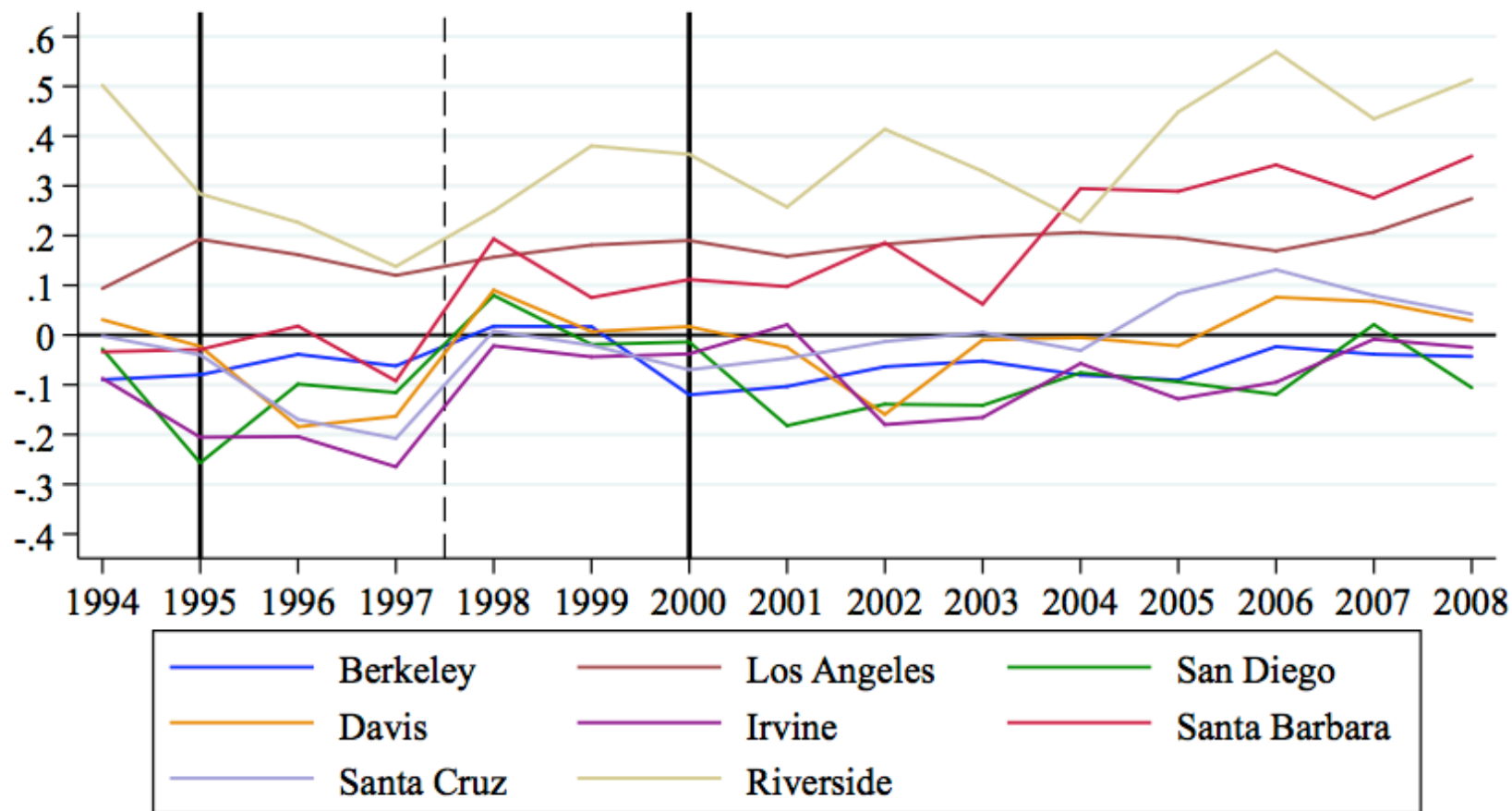
Possible Problems

- What if there was a change in the characteristics of students who were admitted after Prop 209?
  - <u>Solution</u>: use rich administrative data from the UC that allows us to control for changes in student characteristics.

- What if there was a change over time in the popularity of different campuses?
  - <u>Solution</u>: compare the change in the yield rates of URMs to the change in the yield rates of non-URMs.
  - "Difference-in-difference" estimation

What Data?

- Administrative data on every fall freshman applicant to the UC from 1995-2000.

- Over 225,000 applicants.

- Rich information on student characteristics:
  - SAT scores
  - High school GPA
  - Family background (parental income and education)
  - The set of UC schools to which students applied, were admitted and enrolled (if any).

Figure 4: Percentage Difference Between URM and Non-URM Fall Freshman Yield Rates

Note: Shows the difference in the enrollment rate for URMs and non-URMs as a fraction of the enrollment rate for non-URMs. When the gap is positive, it indicates that the enrollment rate is higher for URMs than non-URMs. The bold vertical lines at 1995 and 2000 bracket the years over which our primary analysis is conducted. The dashed vertical line separates the period before and after Prop 209.

Main Results

	Relative Change (Table 5, Column 3)	Baseline URM Yield Rate (Table 4, Panel A)
Berkeley	.057***	.379
UCLA	.039***	.388
UC San Diego	.028***	.202
UC Davis	.034***	.234
UC Irvine	.011	.204
UC Santa Barbara	-.004	.230
UC Santa Cruz	.016*	.181
UC Riverside	.031***	.232

Note: Controls for academic and family background characteristics and students' choice sets.

Bottom line: approximate 10 percent increase in URM yield rate at most campuses.

Why a Warming Effect?

- Schooling may serve as a signal to employers of underlying ability (Spence 1972).

- Banning affirmative action should increase the signal associated with going to a a UC school.

- In addition, the increase in the signaling value should be the largest for low academically achieving students.

- In our data, we find that the warming effect is the largest for students with low academic ability (about twice as large as estimates from previous slide).

Other Possible Factors

- URMs' options outside the UC.

- Recruiting and financial aid.

- The timing of students' response.

Conclusion

- URM yield rates increased after Prop 209.

- No evidence of a "chilling effect"
  - The fall in URM enrollment shares at the more selective UCs was primarily the result of the fall in their likelihood of admission.

- Banning affirmative action may have increased the signaling value of a UC degree.

Table 1: Mean Characteristics of Students Who Apply to the UC System and Admission Probabilites for Each Campus

| | Observations with Missing Data | | Observations with Complete Data | | | | | | URM Relative Change |
| | All | | All | | Non-URM | | URM | | |
	Before	After	Before	After	Before	After	Before	After	
SAT Math	615.9	628.0	597.1	601.9	613.8	617.4	527.9	533.5	2.0**
	(93.4)	(87.5)	(93.6)	(93.3)	(85.8)	(86.0)	(93.0)	(93.1)	
SAT Verbal	584.3	598.1	569.5	572.3	580.2	582.6	525.0	527.1	-0.2
	(100.8)	(95.1)	(97.0)	(96.1)	(94.7)	(93.8)	(93.5)	(93.2)	
Adjusted High School GPA	3.56	3.65	3.62	3.65	3.66	3.68	3.45	3.51	0.04***
	(0.51)	(0.50)	(0.50)	(0.49)	(0.50)	(0.49)	(0.48)	(0.49)	
Parents' Education: At Least 4 Year College Degree	0.70	0.76	0.66	0.65	0.73	0.72	0.37	0.36	0.00
	(0.46)	(0.43)	(0.47)	(0.48)	(0.44)	(0.45)	(0.48)	(0.48)	
Parents' Income <$40,000	0.44	0.35	0.33	0.29	0.28	0.25	0.54	0.49	-0.02***
	(0.50)	(0.48)	(0.47)	(0.46)	(0.45)	(0.43)	(0.50)	(0.50)	
Parents' Income $40,000-$99,999	0.36	0.38	0.43	0.42	0.45	0.42	0.37	0.38	0.04***
	(0.48)	(0.49)	(0.50)	(0.49)	(0.50)	(0.49)	(0.48)	(0.49)	
Parents' Income >$100,000	0.20	0.27	0.24	0.29	0.27	0.33	0.10	0.13	-0.02***
	(0.40)	(0.44)	(0.43)	(0.45)	(0.44)	(0.47)	(0.30)	(0.34)	
Admitted to Berkeley	0.36	0.29	0.36	0.27	0.32	0.28	0.52	0.25	-0.22***
Admitted to UCLA	0.36	0.31	0.40	0.31	0.38	0.32	0.47	0.25	-0.16***
Admitted to UCSD	0.54	0.42	0.59	0.42	0.59	0.44	0.58	0.32	-0.11***
Admitted to UCD	0.67	0.62	0.74	0.66	0.72	0.67	0.85	0.62	-0.18***
Admitted to UCI	0.60	0.56	0.72	0.61	0.73	0.63	0.68	0.53	-0.05***
Admitted to UCSB	0.70	0.52	0.78	0.54	0.78	0.54	0.78	0.52	-0.02***
Admitted to UCSC	0.75	0.77	0.84	0.81	0.84	0.82	0.84	0.76	-0.05***
Admitted to UCR	0.69	0.81	0.84	0.87	0.85	0.88	0.81	0.82	-0.02***
Admitted to UCLA or Berkeley	0.38	0.32	0.41	0.32	0.38	0.33	0.51	0.27	-0.18***
Admitted to Any UC	0.70	0.70	0.81	0.78	0.81	0.79	0.81	0.74	-0.05***
N	26,306	46,370	136,766	149,305	110,072	121,598	26,694	27,707	

Notes: Standard deviations in parentheses. Before includes years 1995-1997. After includes year 1998-2000. Non-URMs include Whites, Asians and Other/Unknown. URMs include Blacks, Hispanics and American Indians. The summary statistics for each cell in columns (1) and (2) are computed for observations with missing data for at least one of the variables listed so that the cell sizes for each variable differ. The final row of columns (1) and (2) shows the number of observations with any missing data. The final column shows the change for URMs relative to non-URMs. Admission probabilites are conditional on applying. Throughout our tables, unless otherwise noted, our source is the student-level UCOP data described in Section V.
*** p<0.01, ** p<0.05, * p<0.1.

Table 2: Mean Characteristics of Students Admitted to the UC System

| | Observations with Missing Data | | Observations with Complete Data | | | | | | |
| | All | | All | | Non-URM | | URM | | URM Relative |
	Before	After	Before	After	Before	After	Before	After	Change
SAT Math	628.7	637.4	607.8	611.4	624.0	625.2	541.0	546.7	4.5***
	(86.0)	(81.2)	(88.9)	(88.4)	(80.5)	(81.6)	(90.6)	(90.5)	
SAT Verbal	602.7	611.1	580.7	581.9	591.3	591.3	537.0	538.1	1.1
	(94.3)	(89.2)	(93.9)	(93.4)	(91.2)	(91.0)	(92.0)	(92.0)	
Adjusted High School GPA	3.68	3.76	3.70	3.74	3.74	3.77	3.53	3.63	0.07***
	(0.49)	(0.46)	(0.48)	(0.46)	(0.47)	(0.46)	(0.49)	(0.47)	
Parents' Education: At Least 4 Year College Degree	0.74	0.79	0.67	0.65	0.74	0.72	0.38	0.35	-0.01
	(0.44)	(0.41)	(0.47)	(0.48)	(0.44)	(0.45)	(0.49)	(0.48)	
Parents' Income <$40,000	0.43	0.35	0.33	0.30	0.28	0.25	0.52	0.49	-0.01***
	(0.50)	(0.48)	(0.47)	(0.46)	(0.45)	(0.44)	(0.50)	(0.50)	
Parents' Income $40,000-$99,999	0.37	0.39	0.44	0.42	0.45	0.42	0.38	0.38	0.04***
	(0.48)	(0.49)	(0.50)	(0.49)	(0.50)	(0.49)	(0.48)	(0.49)	
Parents' Income >$100,000	0.20	0.25	0.24	0.29	0.27	0.32	0.10	0.13	-0.02***
	(0.40)	(0.44)	(0.43)	(0.45)	(0.44)	(0.47)	(0.30)	(0.34)	
N	18,395	32,503	111,368	116,493	89,661	96,024	21,707	20,469	

Notes: Standard deviations in parentheses. Before includes years 1995-1997. After includes years 1998-2000. Non-URMs include Whites, Asians and Other/Unknown. URMs include Blacks, Hispanics and American Indians. The summary statistics for each cell in columns (1) and (2) are computed for observations with missing data for at least one of the variables listed so that cell sizes for each variable differ. The final row of columns (1) and (2) shows the number of observations with any missing data. The final column shows the change for URMs relative to non-URMs. *** p<0.01, ** p<0.05, * p<0.1.

Table 3: Average Characteristics of Students Who Do Not Enroll Compared to Students Who Do Enroll, Among Admitted Students at Selected Schools

Variables	Admitted to Any UC			Admitted to Berkeley			Admitted to Riverside		
	Do Not Enroll	Difference if Enroll	Standard Error of Difference	Do Not Enroll	Difference if Enroll	Standard Error of Difference	Do Not Enroll	Difference if Enroll	Standard Error of Difference
SAT Math	610.0	-0.6	(0.375)*	674.4	-14.4	(0.720)***	583.2	-31.8	(0.987)***
SAT Verbal	586.1	-8.4	(0.395)***	658.2	-25.7	(0.787)***	539.7	-27.8	(0.965)***
Adjusted High School GPA	3.73	-0.02	(0.002)***	4.08	-0.11	(0.003)***	3.57	-0.16	(0.005)***
Parents' Income <$40,000	0.28	0.05	(0.002)***	0.27	0.05	(0.005)***	0.39	0.07	(0.005)***
Parents' Income $40,000-99,999	0.43	-0.01	(0.002)***	0.41	-0.01	(0.005)**	0.40	0.000	(0.005)
Parents' Income >$100,000	0.28	-0.04	(0.002)***	0.32	-0.04	(0.005)***	0.21	-0.07	(0.004)***
Parents' Education: At Least 4 Year College Degree	0.68	-0.03	(0.002)***	0.75	-0.051	(0.004)***	0.58	-0.08	(0.005)***

Asterisks indicate whether the difference in the mean for students who do and do not enroll is statistically different from zero, *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table 4: Yield Rates Before and After Prop 209, by Race

	UC System (1)	Tier 1 (2)	Berkeley (3)	UCLA (4)	UCSD (5)	UCD (6)	UCI (7)	UCSB (8)	UCSC (9)	UCR (10)
Panel A: Pre Prop 209 (1995-1997)										
URM	54.6%	49.7%	37.9%	38.8%	20.2%	23.4%	20.4%	23.0%	18.1%	23.2%
Non-URM	55.0%	48.3%	40.6%	33.8%	23.9%	26.7%	26.0%	23.8%	20.8%	19.1%
Asian	61.4%	54.0%	46.1%	34.2%	24.0%	28.7%	30.1%	17.6%	14.1%	19.1%
White	50.7%	42.9%	35.6%	33.7%	24.3%	25.8%	19.0%	27.2%	23.3%	19.6%
Other/Undeclared	50.2%	45.4%	37.5%	31.7%	21.1%	22.4%	22.0%	18.1%	22.6%	17.8%
Panel B: Post Prop 209 (1998-2000)										
URM	52.7%	54.2%	41.0%	44.6%	24.4%	27.5%	25.6%	27.3%	19.4%	24.8%
Non-URM	55.0%	53.7%	42.7%	38.1%	23.9%	26.4%	26.3%	24.3%	19.8%	18.6%
Asian	62.1%	59.6%	48.2%	38.2%	24.1%	28.2%	29.6%	16.6%	14.4%	21.3%
White	50.2%	48.2%	37.5%	38.2%	24.1%	26.5%	21.1%	28.0%	22.0%	15.3%
Other/Undeclared	51.6%	51.2%	40.0%	37.5%	22.9%	20.3%	24.1%	24.0%	21.7%	15.3%
Panel C: Change										
URM	-1.9%	4.5%	3.1%	5.8%	4.1%	4.1%	5.1%	4.3%	1.3%	1.6%
Non-URM	0.1%	5.4%	2.1%	4.3%	0.0%	-0.3%	0.3%	0.5%	-1.0%	-0.6%
Asian	0.7%	5.6%	2.2%	4.0%	0.1%	-0.6%	-0.5%	-1.0%	0.4%	2.2%
White	-0.5%	5.3%	1.9%	4.5%	-0.2%	0.7%	2.1%	0.8%	-1.3%	-4.3%
Other/Undeclared	1.4%	5.7%	2.5%	5.8%	1.7%	-2.1%	2.1%	5.8%	-0.8%	-2.4%
Change for URMs vs. Non-URMs										
	-2.0%	-1.0%	1.0%	1.5%	4.1%	4.4%	4.9%	3.8%	2.3%	2.2%

Notes: Column (1) shows the probability that students admitted to any UC school enroll in any UC school. Column (2) shows the probability that students admitted to either Berkeley or UCLA (Tier 1) enroll in either school. The remaining columns show the probability that students admitted to the school given in the column heading enroll in that school. The last row shows the difference between the change in enrollment rates for URMs and non-URMs.

Table 7: Total URM Enollment in the UC and The Racial Composition of California SAT Takers Net of UC Enrollment Before and After Prop 209, by SAT Math Bracket

	SAT Math Bracket				
	500-549	550-599	600-649	650-699	700-
Panel A: Number of URMs Enrolled in the UC as Fall Freshman					
Pre 209	2,759	2,498	1,922	974	471
Post 209	2,442	2,590	1,886	1,043	527
Change	-317	92	-36	69	56
Panel B: Percentage of CA SAT Takers Not Enrolled in the UC Who Are URMs					
Pre-209	21.2%	15.5%	11.0%	8.8%	5.3%
Post-209	21.6%	15.4%	11.2%	8.5%	5.3%
Change	0.4%	-0.1%	0.2%	-0.3%	0.0%

Notes: The percentages in this table are calculated by dividing the number of URM SAT takers in California within each SAT math bracket less the number of URMs enrolled in the UC in each bracket by the total number of SAT takers within each bracket less the total number enrolled in the UC in each bracket. The period before Prop 209 is 1995-1997, and the period after Prop 209 is 1998-2000. Source: College Board's Test Takers Database (see text for details).

Table 8: Percent URM Among Fall Freshman Enrollees Compared to the Estimated Warming Effect, by School

	Tier 1	Berkeley	UCLA	UCSD	UCD	UCI	UCSB	UCSC	UCR
Pre Prop 209	0.24	0.22	0.26	0.13	0.15	0.13	0.18	0.18	0.26
Change Post Prop 209	-.098***	-.098***	-.099***	-.02***	-.017***	0.0046	-0.0049	-.016*	0.016
Estimated Warming Effect[1]	.031***	.057***	.039***	.028**	.034***	0.011	-0.004	0.016	.031***

Correlation Between Change in Percent URM and the Estimated Warming Effect: -0.65

[1] The estimated warming effect is the coefficient on Post*URM from Column 3 of Table 5.
*** p<0.01, ** p<0.05, * p<0.1.

Table A1: Percentage of Admitted Students with Missing Values for Select Variables

	All		Non-URM		URM	
	Before	After	Before	After	Before	After
SAT Math	1.4%	1.2%	1.1%	1.0%	3.0%	2.2%
SAT Verbal	1.4%	1.2%	1.1%	1.0%	3.0%	2.2%
Adjusted High School GPA	1.0%	1.4%	1.1%	1.5%	0.6%	0.8%
Parental Education	4.0%	5.4%	4.4%	5.9%	2.2%	3.0%
Parental Income	11.7%	19.6%	12.8%	21.1%	6.8%	11.4%
Any of Above	14.2%	21.8%	14.9%	23.3%	10.9%	14.3%
N	129,763	148,996	105,411	125,116	24,352	23,880

Notes: Numbers in the table shows the percentage of students admitted into at least one school in the UC system who have missing values for selected variables. Before Prop 209 includes the years 1995-1997. After Prop 209 includes the years 1998-2000. Non-URMs include Whites, Asians and Other/Unknown. URMs include Blacks, Hispanics and American Indians. The final row shows the total number of admitted students in each column.