The Path to and Returns of a College Degree for the Underrepresented Student: Evidence from Texas

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Critical *College Completion* Stories for Underrepresented Students in Texas

1. How Underrepresented Minority (URM) students perform in comparison to More Advantaged Students

2. How Underrepresented Minority students perform in comparison to other URM students.

3. The returns to attending a Minority Serving Institution for the Underrepresented Minority Student

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Guiding Questions

1. What do we know about what factors are most likely to comprise the college completion gap? What sectors are most responsible?

2. How do we appropriately assess the role of the postsecondary sector in the larger college completion equation? How do we know if an institution is "successful" in increasing college graduation rates and whether there are returns to that education for the *underrepresented?*

Stories of the Underrepresented Minority Student (URM) through data across the educational trajectory.

Method 1: Variance Decomposition Analysis
Method 2: Propensity Score Analysis

Contextual Forces

1. A majority of all new births are now non-White; a majority of all students in the public schools are now non-White.

2. Latinos now the largest minority in 2- and 4-year colleges in universities in the U.S.

3. The rising cost of tuition and shifts in institutional choice among students due to cost

4. Advances in data systems to assess "effectiveness" of policy and programming

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Texas Higher Education

38 Public and 38 Private Universities

2 Flagship Institutions: University of Texas at Austin and Texas A&M University

9 Historically Black Colleges & Universities
- 9 Institutions (behind AL & NC)
- 19,781 undergraduate students
- 62% Black, 21% Hispanic, 14% White

64 Hispanic Serving Institutions (growing in number)
188,785 undergraduate students
35% of the US population of Hispanic students
55% Hispanic; 27% White; 9% Black

Dataset: Texas Schools Microdata Panel
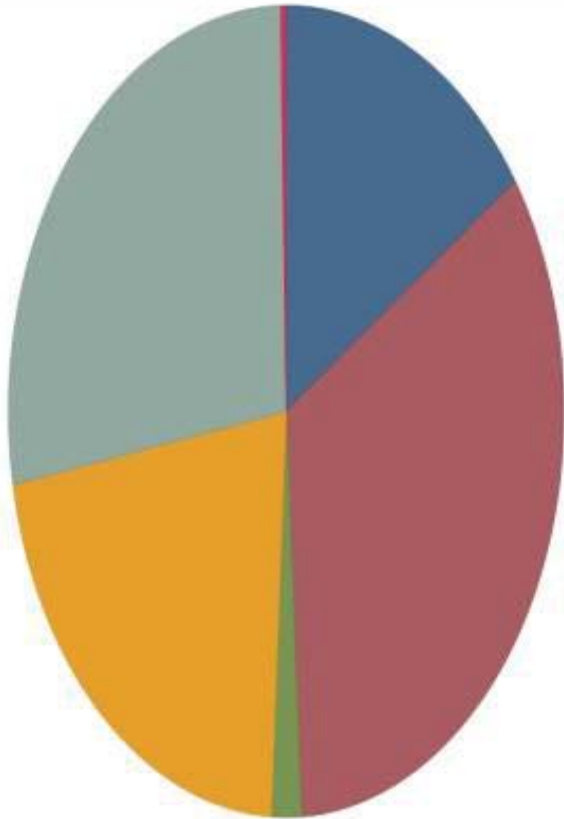
- <u>Cohorts for Relevant Pre- and Post-Policy Periods</u>: 1997, 2000, 2002, 2006, 2008

- <u>Sample</u>: High School Graduates (Coursework back to 10th grade)

- <u>Data</u> include information about race, sex, LEP status, economic disadvantage, high school curriculum, statewide exam scores, high school context (pupil to teacher ratio, enrollment, percent minority, urbanicity), distance to postsecondary education, postsecondary enrollment, unemployment rate, and individual wage data

- <u>EMPIRICAL STRATEGY</u>:
  - Logistic Regression, Decomposition Analysis, and Propensity Score Matching

  Enrollment and Completion of a BA degree in 6 Yrs. (starting at 4-year school)

Enrollment into Institutional Type

Enrollment by Sector, 2002 — Hispanic

Legend: 2yr Traditional, 2yr HSI, 2yr HBCU, 4yr Traditional, 4yr HSI, 4yr HBCU

Enrollment by Sector, 2002 — Black

Legend: 2yr Traditional, 2yr HSI, 2yr HBCU, 4yr Traditional, 4yr HSI, 4yr HBCU
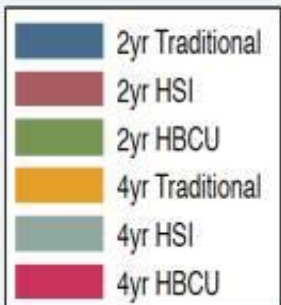
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Enrollment in Minority Serving Institutions
2002

Black Students

36.56%

63.44%

| Traditional | HBCU |

Hispanic Students

42.24%

57.76%
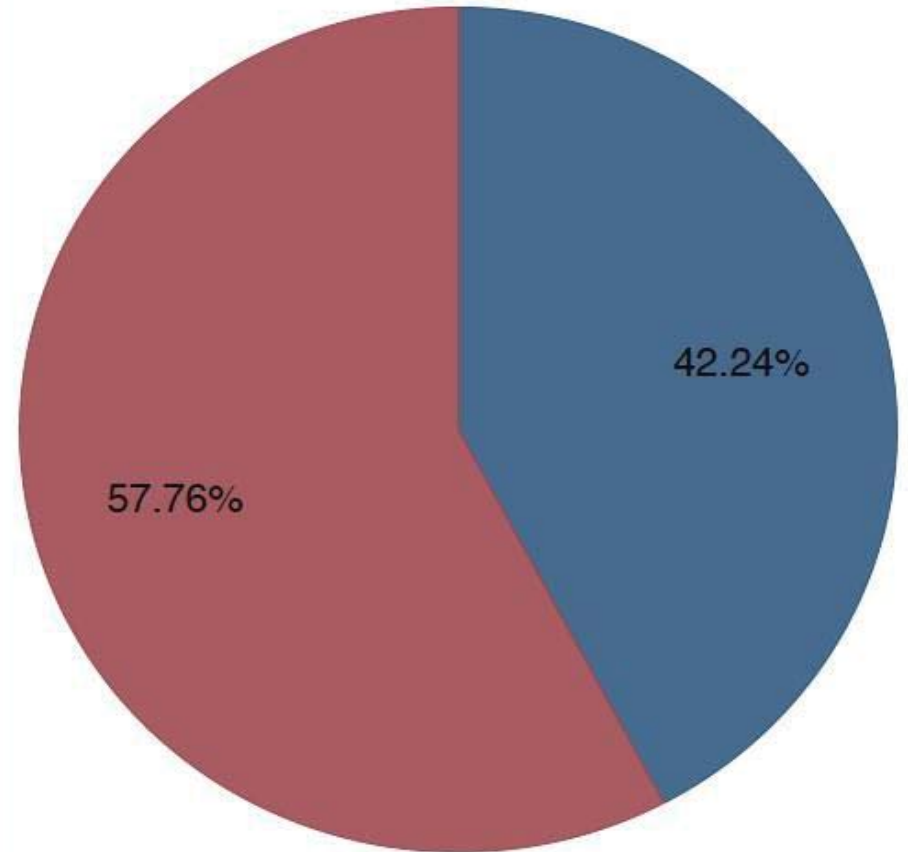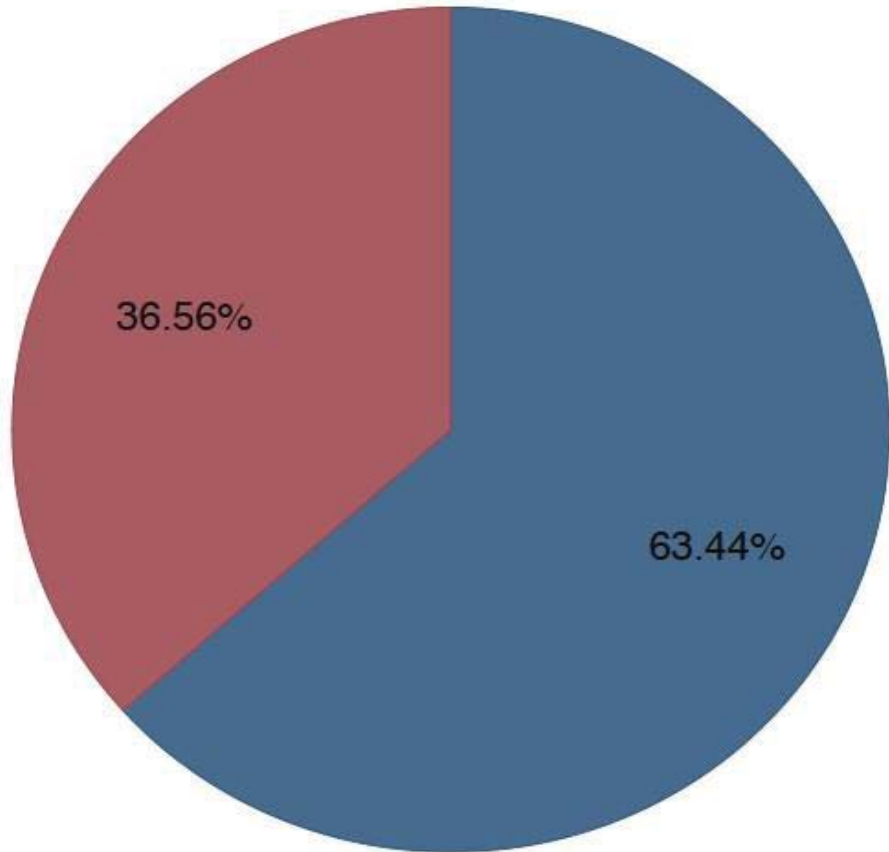
| Traditional | HSI |

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Story 1: The Completion Gap by Race and Ethnicity

The Racial College Completion Gap at 4-Year Institutions
(2002 Cohort in Texas)

White	Latino	Black
25,875	9,837	5,139

65.5%	51.4%	43.6%
	-14.1	**-21.9**

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Who are these students?

(College Enrollees at 4-Year Institutions)

Economic Disadvantage

White	3.4%
Hispanic	**48.0%**
Black	**30.7%**

Academic Preparation (e.g. Trigonometry)

White	69.9%
Hispanic	**60.8%**
Black	**46.8%**

Percent Minority in High School Context by Race

White	32.0%
Hispanic	**74.3%**
Black	**66.2%**

The Racial College-Completion Gap by Sector
Variance Decomposition Analysis

■ Pre-College (Ind. + Acad)   ■ Postsecondary   ■ Unexplained

4%

61%

6%

34%

60%
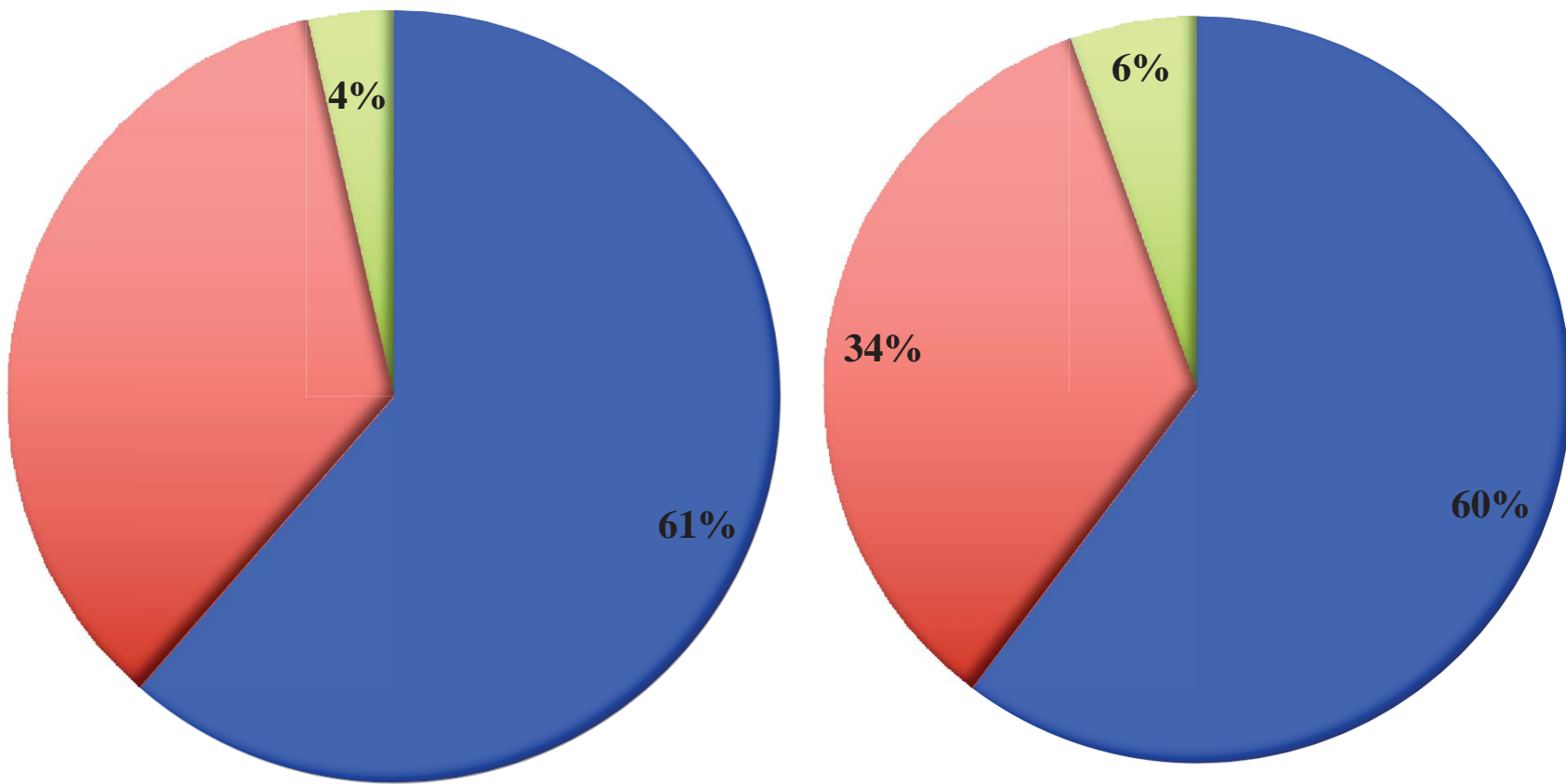
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Pre-College Factors: individual background, academic preparation and high school context; Postsecondary Factors: enrollment (size), percent of tenured faculty, faculty-student ratio, and per pupil expenditure*Source:* Authors' calculations of 2002 cohort, Texas Higher Education Coordinating Board, and Texas Education Agency

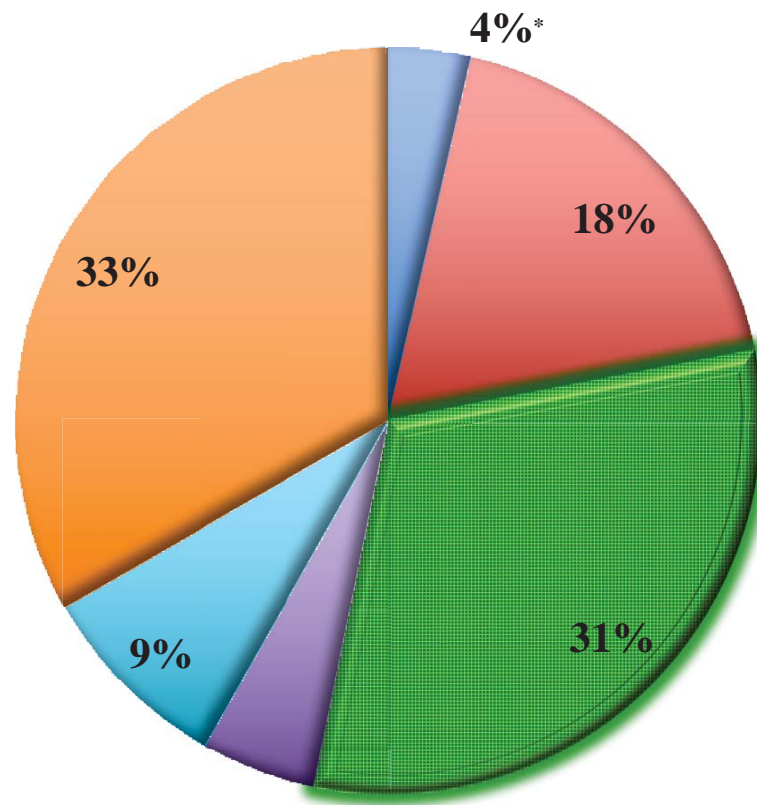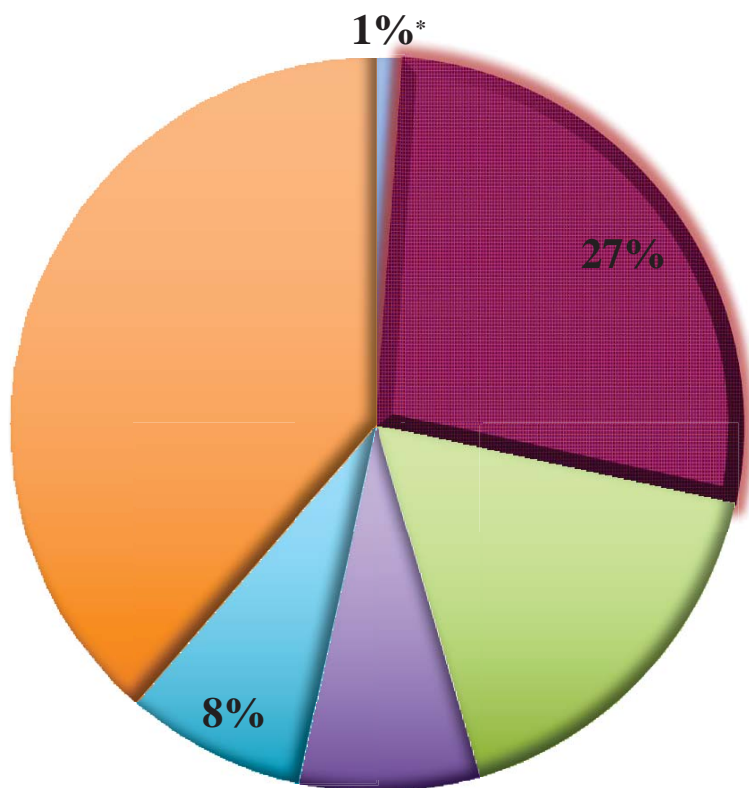# The *Pre-College Contribution* Story

■ Sex   ■ Economic Status   ■ Coursework   ■ Math Exam Score   ■ Dual Enrollee   ■ HS Context

Latino-White (The 61% Gap)

1%*

27%

8%

Black-White (The 60% Gap)

4%*

18%

33%

31%

9%

Other contributing factors included but not shown in the figures are LEP Status and Working while in High School. Latino-White Gap: LEP Status (0%), Working (0%); Black-White Gap: LEP Status (0%), Working (1%).
*Note: "Sex" represents male status, appears to decrease the racial college completion gap, and is a negative value in the model.
Source: Authors' calculations of 2002 cohort, Texas Higher Education Coordinating Board, and Texas Education Agency

Lessons Learned

- Understanding the role of race in society and schools
- The role of strong data across the P-20 trajectory
- The importance of the pre-college sector in the larger college completion equation
- The role of state context and capitalizing on unique data systems for larger national impact

Story 2: Measuring Institutional Effectiveness on College Completion Rates

Six-Year College Graduation Rates for Students Entering 4-year Public Institutions Year After HS Grad by Cohort in Texas

Graduation Rate

- 70%
- 73%
- 73%
- 74%
- 74%
- 36%
- 38%
- 33%
- 33%
- 32%

Legend:
- ◆ WHITE
- ■ HISPANIC
- ▲ BLACK
- ✖ ASIAN
- ✖ LEP - YES
- ● ECON DISADV
- ＋ NON-ECON DISADV
- ━ H.S.I.
- ━ HBCU
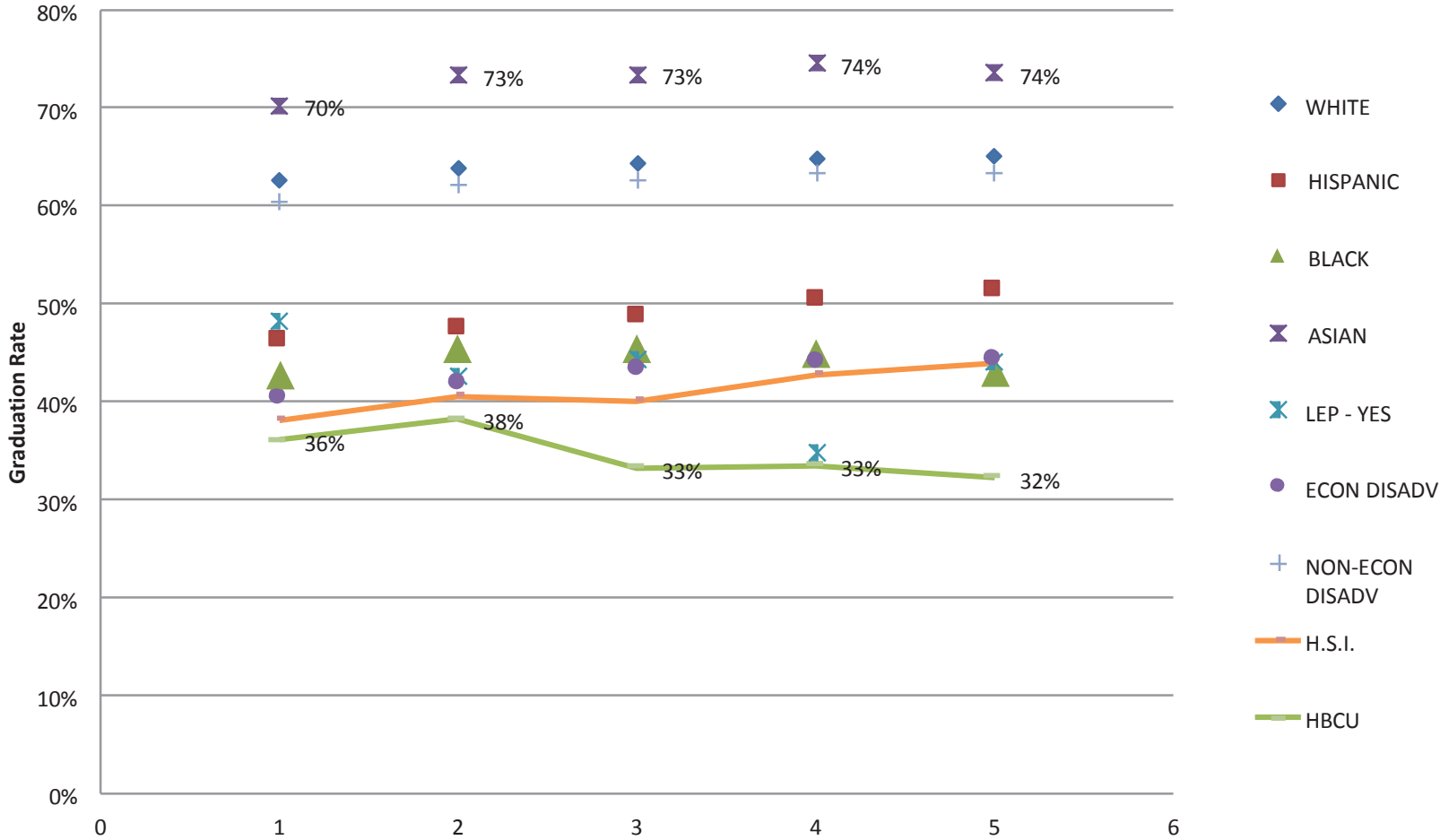
Entering Cohort: (1) 1997; (2) 1998; (3) 1999; (4) 2001; (5) 2002
Source: Texas Schools Microdata Project

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Students who attend Minority Serving Institutions: Are the "Inputs" different?

(Flores & Park, 2013)

Table 3:
Select Group Descriptives Over Time, by Race and MSI Designation

	Male	Economic Disadvantage	AP/IB Course	Trigonometry Course	Math Exam Score	Dual Enrollment	HS Percent Minority	HS Urbanicity	County Unemp.
1997									
Hispanic, traditional	45.82%	24.99%	45.76%	55.54%	51.56	15.31%	58.39%	50.19%	6.42%
Hispanic, HSI	45.68%	47.98%	25.48%	34.99%	46.47	7.13%	83.16%	57.99%	10.44%
Black, traditional	34.83%	24.09%	31.08%	38.72%	46.32	7.68%	57.31%	57.88%	5.01%
Black, HBCU	42.70%	24.45%	14.60%	22.54%	40.62	2.83%	70.02%	67.15%	5.06%
2000									
Hispanic, traditional	45.63%	28.42%	71.71%	71.65%	53.73	26.38%	56.69%	50.88%	4.67%
Hispanic, HSI	42.49%	51.49%	58.10%	56.29%	50.39	16.61%	84.42%	62.20%	6.10%
Black, traditional	37.17%	25.74%	50.40%	51.85%	49.47	11.14%	58.51%	56.07%	4.31%
Black, HBCU	42.22%	29.17%	24.90%	31.10%	44.38	4.79%	71.36%	64.30%	4.29%
2002									
Hispanic, traditional	45.90%	33.15%	71.63%	70.33%	54.01	33.94%	59.77%	49.14%	4.91%
Hispanic, HSI	44.40%	57.79%	55.11%	54.14%	51.42	25.64%	84.45%	60.59%	7.79%
Black, traditional	38.59%	28.68%	50.47%	56.33%	50.95	16.65%	62.40%	56.80%	6.35%
Black, HBCU	41.52%	32.88%	25.92%	31.03%	46.98	7.66%	72.38%	66.30%	6.25%

Research Design: Matching Technique

Outcome Variable

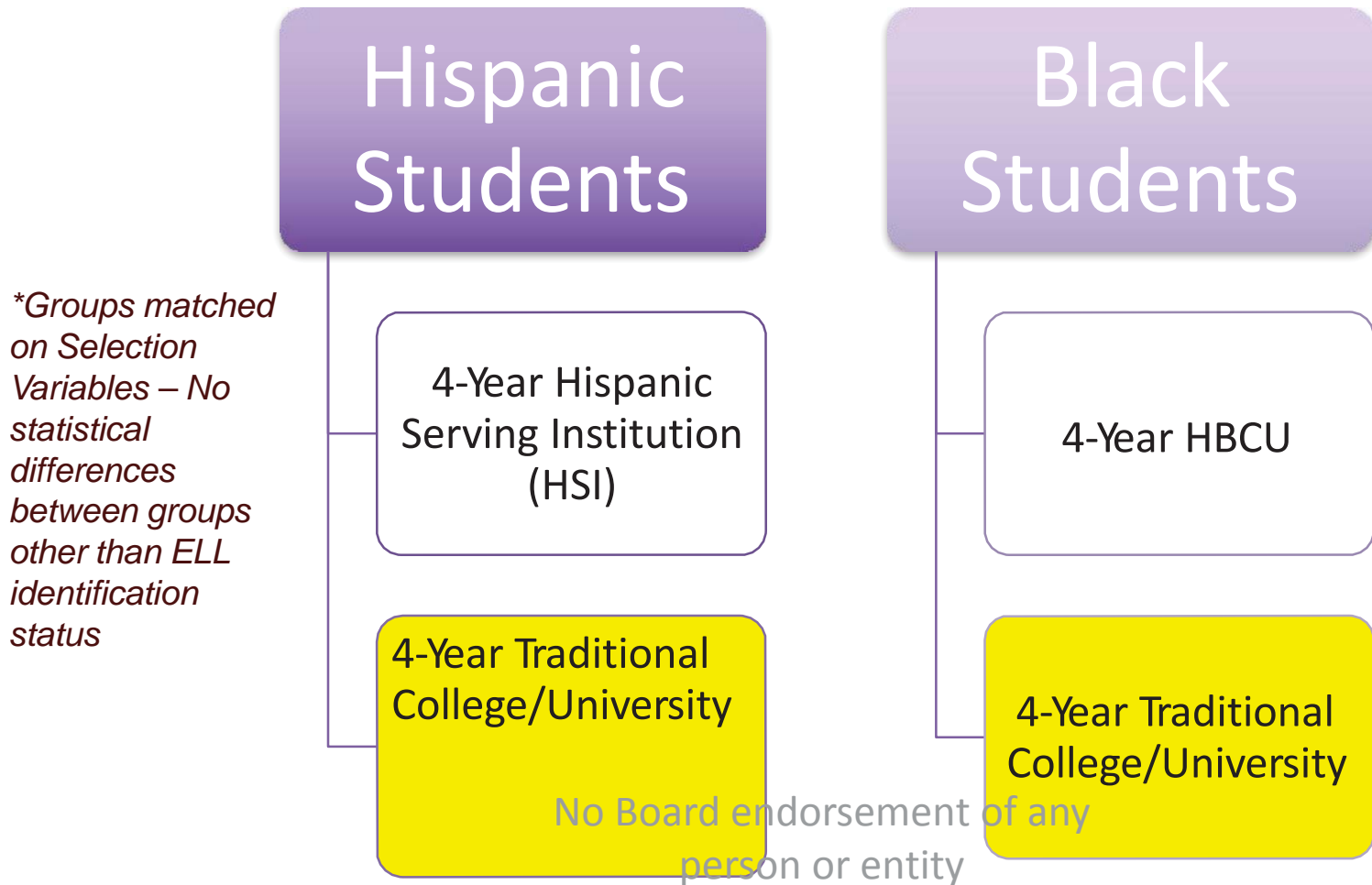College Completion

Selection Variables

1. Gender
2. Economic Capacity of Student
3. LEP Status (High School)
4. Trigonometry Course
5. State Math Exam
6. Dual Enrollment Course
7. Pupil: Tchr. Ratio
8. HS Context (enrollment, % minority, PPE, Urban Location)
9. Worked in HS
10. County Unemp. Rate of HS Location
11. Proximity to PSE
12. Selectivity

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Treatment and Control Groups

Hispanic Students

4-Year Hispanic Serving Institution (HSI)

4-Year Traditional College/University

Black Students

4-Year HBCU

4-Year Traditional College/University

Groups matched on Selection Variables – No statistical differences between groups other than ELL identification status

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Completion: Descriptive Results

Table 2
Completion Rates by Race and MSI Designation

1997		Hispanic (HSI)	Black (HBCU)
	Traditional	47.73%	44.01%
	MSI	37.04%	37.32%
	Difference:	10.69%	6.69%
2000			
	Traditional	65.20%	55.56%
	MSI	52.00%	41.60%
	Difference:	13.20%	13.96%
2002			
	Traditional	51.72%	45.55%
	MSI	43.40%	33.63%
	Difference:	8.32%	11.92%

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Propensity Score Results: Latino/Hispanic Students and HSIs

Table 5 Point estimates and predicted probabilities of college completion for Hispanic students at HSIs versus traditional institutions

1997	M1 Basic model	M2 Matched model	M3 Matched model with matching controls	M4 Matched model with institutional controls	M5 Matched model with full controls
HSI	−.440***	−.417***	−.453***	−.028	−.183
	(.06)	(.1)	(.1)	(.24)	(.26)
Difference in predicted probability	−10.69 %***	−9.99 %***	−10.81 %***	−.67 %	−4.35 %
N	6,551	1,842	1,842	1,842	1,842
2000	Basic model	Matched model	Matched model with matching controls	Matched model with institutional controls	Matched model with full controls
HSI	−.548***	−.334***	−.392***	−.185	−.361
	(.06)	(.09)	(.09)	(.23)	(.25)
Difference in predicted probability	−13.2 %***	−8.16 %***	−9.53 %***	−4.55 %	−8.81 %
N	7,092	2,060	2,060	2,060	2,060
2002	Basic model	Matched model	Matched model with matching controls	Matched model with institutional controls	Matched model with full controls
HSI	−.334***	−.120	−.138*	−.320*	−.316
	(.05)	(.06)	(.07)	(.14)	(.16)
Difference in predicted probability	−9.32 %***	−2.98 %	−3.4 %*	−7.2 %*	−7.02 %
N	9,837	4,228	4,228	4,228	4,228

Source: Authors' calculations, Texas Higher Education Coordinating Board, and Texas Education Agency

* $p < .05$; ** $p < .01$; *** $p < .001$

Propensity Score Results:
Black Students and HBCUs

Table 6 Point estimates and predicted probabilities of college completion for black students at HBCUs versus traditional institutions

1997	M1	M2	M3	M4	M5
	Basic model	Matched model	Matched model with matching controls	Matched model with institutional controls	Matched model with full control
HBCU	−0.278***	0.009	0.018	−0.107	−0.092
	(.08)	(.13)	(.14)	(.18)	(.19)
Difference in predicted probability	−6.69 %***	0.06 %	0.77 %	−3.90 %	−2.10 %
N	3,387	984	984	984	984
2000					
	Basic model	Matched model	Matched model with matching controls	Matched model with institutional controls	Matched model with full control
HBCU	−0.563***	−0.312*	−0.292*	−.422*	0.267
	(.07)	(.12)	(.13)	(.17)	(.63)
Difference in predicted probability	−13.96 %***	−7.78 %***	−7.43 %*	−10.07 %*	6.03 %
N	3,768	1,106	1,106	1,106	1,106
2002					
	Basic model	Matched model	Matched model with matching controls	Matched model with institutional controls	Matched model with full control
HBCU	−0.501***	0.112	.110	0.383	0.243
	(.06)	(.10)	(.10)	(.25)	(.27)
Difference in predicted probability	−11.92 %***	2.68 %	2.54 %	8.90 %	6.44 %
N	6,087	1,954	1,954	1,954	1,954

Source: Authors' calculations, Texas Higher Education Coordinating Board, and Texas Education Agency

$* \ p < .05; ** \ p < .01; *** \ p < .001$

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Implications

- **Attending an MSI does not have a consistent negative or positive effect on college graduation outcomes in Texas**

- **Results do not suggest similar negative impact on completion seen in literature examining starting at a community college**

- The effect of the "advantaged" MSI cohort - need more work on transfers within MSIs

- Need to incorporate the role of financial aid in K-20 database systems

- Non-MSIs, on average, do have higher college graduation rates for minority students, but the pool of students entering MSIs, as our research shows, are qualitatively different with regard to income and academic preparation.
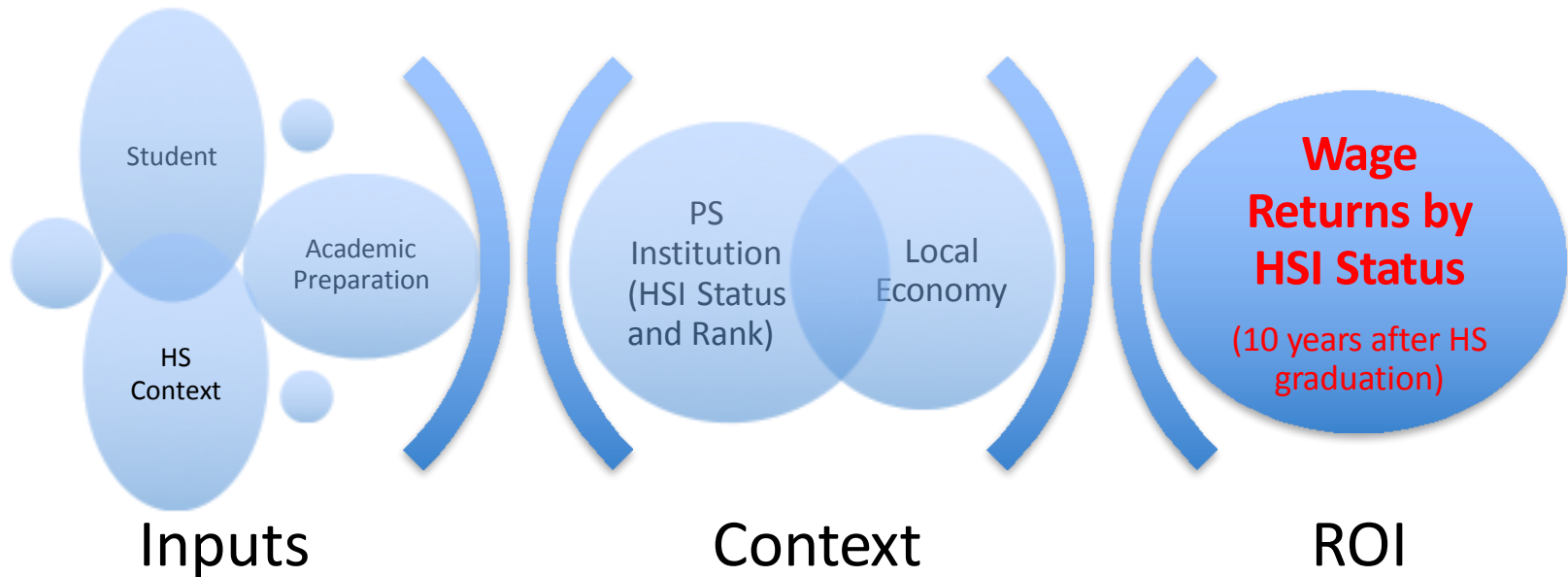
Lessons Learned

Key Lessons:

1. Get and USE good data

2. Account for the pre-college experience in the college completion story: Consider the K-16 experience when possible

3. Equalize comparison groups when possible

Story 3: The Returns to Attending an Hispanic Serving Institution

College Access and Completion Using Administrative Data: A Diagram

Inputs

- Student
- HS Context
- Academic Preparation

Context

- PS Institution (HSI Status and Rank)
- Local Economy

ROI

- **Wage Returns by HSI Status** (10 years after HS graduation)

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The Story – *Without* Controls:

Income differentials by HSI designation
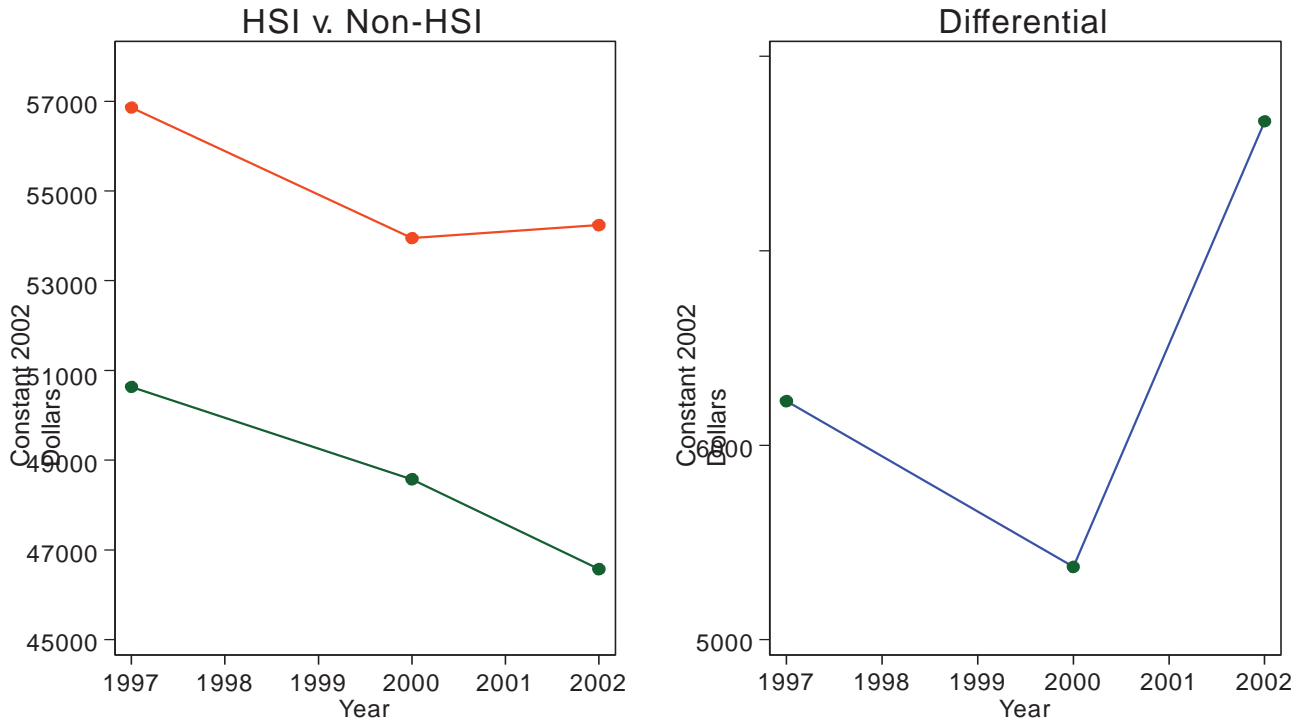
Source: Texas Workforce Comission & Authors' Calculations

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Research Questions

- *1. Is there a difference in the student characteristics and earnings among Hispanics for HSI graduates compared to non-HSI graduates in Texas?*

- *2. What is the relationship between attending an HSI and earnings for Hispanic college graduates in Texas?*

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Empirical Strategy: *Multiple comparisons (accounting for selectivity)*

- Outcome: *Wages earned 10 years post-HS graduation*
- Treatment: *Attending a Hispanic Serving Institution*
- General model:
  $log(earnings) = \alpha + \beta(HSI) + \theta(S) + \delta(ACAD) + \xi(COMM) + \lambda(ECON) + \pi(EXPER) + MAJ + LOC + \varepsilon$
- Comparison groups
  - Model 1: All public institutions (HSI vs. non-HSI)
  - Model 2: Somewhat selective & non-selective (HSI vs. non-HSI)
- Inclusion criteria
  - Immediate entry into postsecondary education
  - Baccalaureate degree completion within six years
  - Workforce participation

Selected Descriptive Statistics by MSI Status: 2002 (sample year)

	HSIs	NON-HSIs	DIFFERENCE
Wages (2002 dollars)	46,574.06	54,241.19	7,667.13
Sex (percent male)	38.88	41.28	2.41
AP or IB course	65.65	75.13	-9.48
Trigonometry course	64.49	76.86	-12.37
HS percent minority	84.23	58.58	25.64
HS urbanicity	58.99	48.21	10.78
FRL status	54.89	29.94	24.95

Results: HSI Earnings Differential (Including All Institutions)

1997	2000	2002
-7.10%	-6.50%	-10.80%

[Controlling for student background characteristics, high school academic preparation, community context, economic capacity, years of experience, college major, and geographic location of employment.]

Results: HSI Earnings Differential
(Excluding Selective Institutions)

1997　　　　2000　　　　2002

No Differences

[Controlling for student background characteristics, high school academic preparation, community context, economic capacity, years of experience, college major, geographic location of employment, and college selectivity]

Summary of Findings

- The share of Hispanic male graduates was higher at non-HSIs compared to HSIs.

- The wage differential for Hispanics has expanded between HSI graduates and non-HSI graduates.

- Hispanic Graduates of HSIs were nearly twice as likely to be classified as economically disadvantaged, compared to graduates of non-HSIs.

- **After accounting for college selectivity, there was no difference in the earnings of Hispanic graduates from HSIs and non-HSIs.**

Information Learned

1. College Completion is not just a postsecondary story.

2. Comparison groups and methods matter in estimating the effect of a college type on completion outcomes. Go beyond descriptive statistics.

3. Return on investment stories of college attendance matter by college selectivity, race, and ethnicity up to a certain point.

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