

The Need for New Leadership: Crisis in Texas Higher Education

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My Mother



Born in
Chihuahua, Mexico.
Lived 75 years in
Los Angeles, CA.
Very proud and very
pro Mexico and
California.

A Somewhat Recent Conversation

Mother: Honey, California has always had a great education system.

Me: Mom, you are 50 years out of date. Today California is at the bottom not the top.

Mother: What happened?

Me: The Golden State became brown. In 1950 <7% of California was Hispanic. Now it is over 40%, and in Los Angeles public school we browns are greater than 75%.

A Somewhat Recent Conversation

Mother: But we Mexicans are smart. Look at you!

Me: Yes, but in the United States it just doesn't work that way.

Mother: Why is that?

Me: I am not completely sure, but it has to do with our own culture and value system, inner-city American's culture and value system, big city public education, and other confusing things.

A Somewhat Recent Conversation

Mother: Can we fix it?

Me: I am not sure, but we must try

Mother: Ok, honey, please try.



The Status Quo

A Profile of the Great State of Texas

Demography: Who are we today, and who will we be tomorrow?

Texas Population

Year	1980	1990	2000	2010	2020	2030	2040
White	66%	61%	53%	47%	43%	37%	32%
Hispanic	21%	25%	32%	37%	43%	47%	53%
Black	12%	12%	11%	12%	11%	10%	9%
Other	1%	2%	3%	4%	5%	5%	6%

The Browning of Texas

Population	Per Decade
White	↓ 5%
Hispanic	↑ 5%
Black	↓ 1%
Other (Asian)	↑ 1%

Consequence

In a little over 100 years

There will be no Whites in Texas

There will be no Blacks in Texas

Hispanics will be 85% of the population

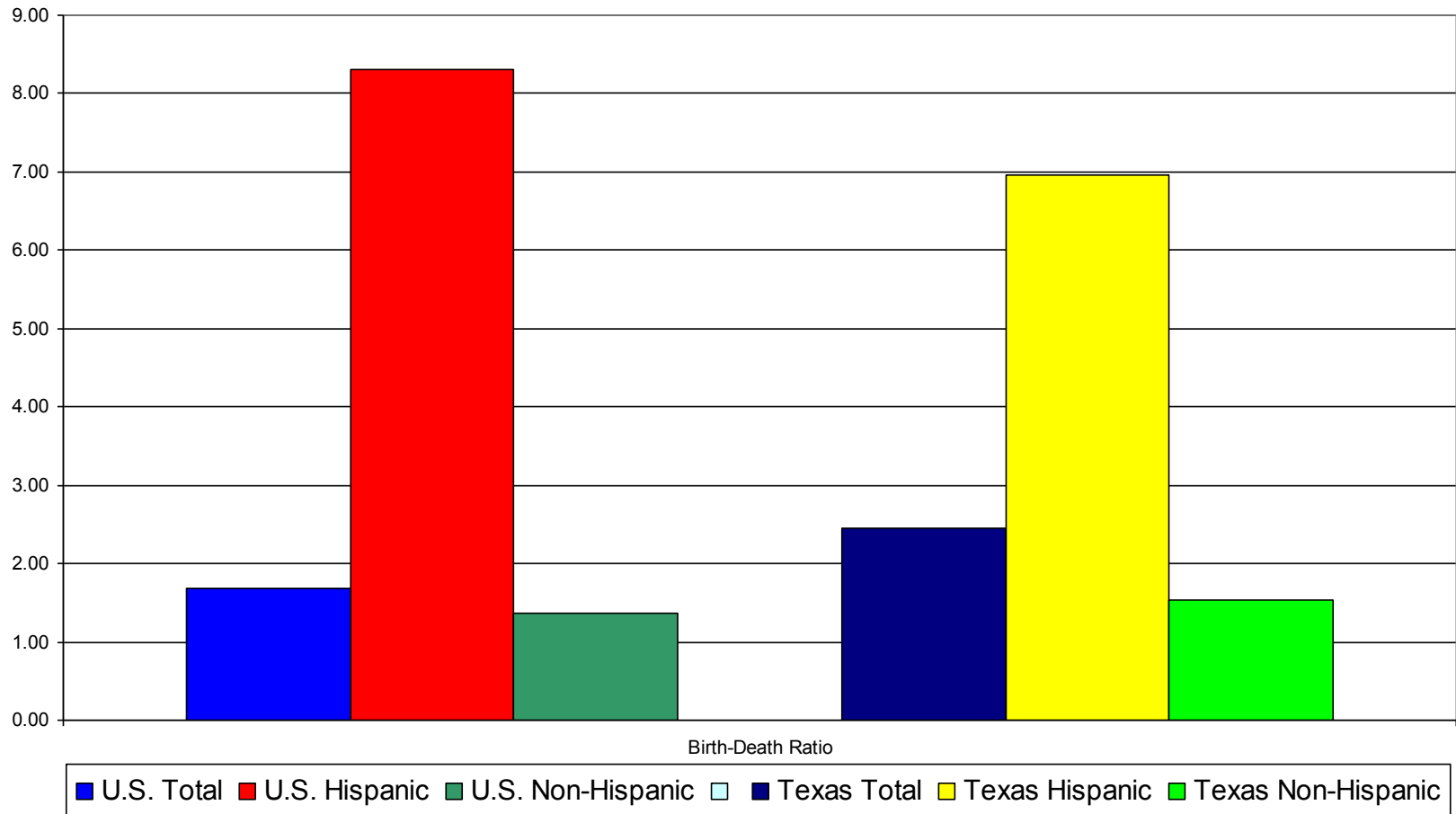
Other (Asians) will be 15% of the population

“The Browning of America”

Press Release: Pew Hispanic Center July 2011

The Mexican American Boom: For the first time in history births overtake immigration.

Birth-Death Ratios by Hispanic Origin, United States and Texas, 2000-2006

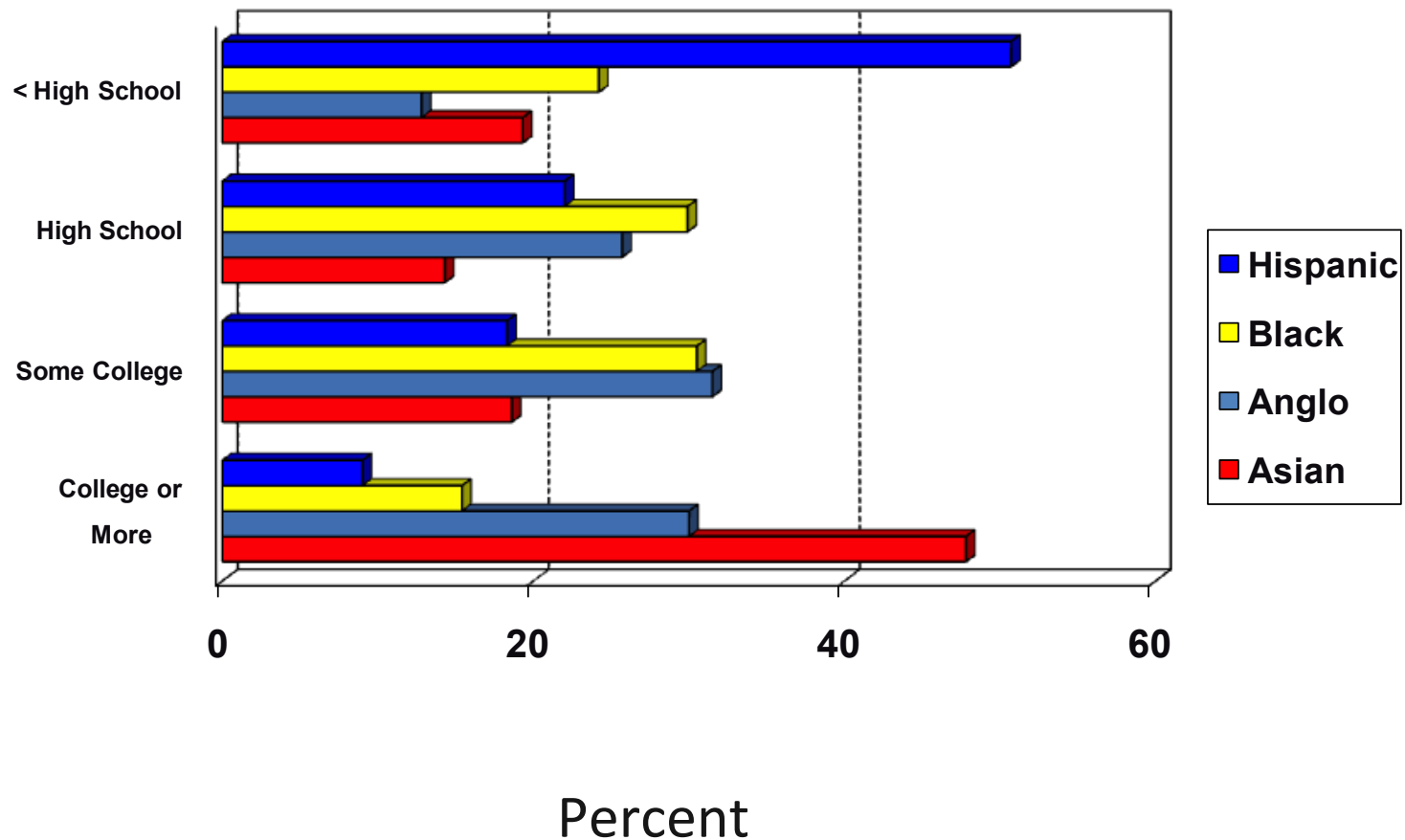


Source: U.S. data from U.S. Census Bureau. Texas data from Texas State Data Center



How are we Minorities doing?

Educational Attainment in 2000 in Texas for Persons 25+ Years of Age By Race/Ethnicity





But, we do not achieve this sad
distinction without help.

REPORT: SCHOOL DISCIPLINE UNEVEN

EYE-OPENER:

60% of older students
expelled or suspended*

CRITICS SAY:

Minor infractions
being criminalized

- Minorities at a significantly higher rate, and do not graduate.
- HISD – 94% minority



For good reason the nation uses representation in
the areas of

Mathematics

Computer Science

Electrical Engineering

as indicators of health of STEM representation.

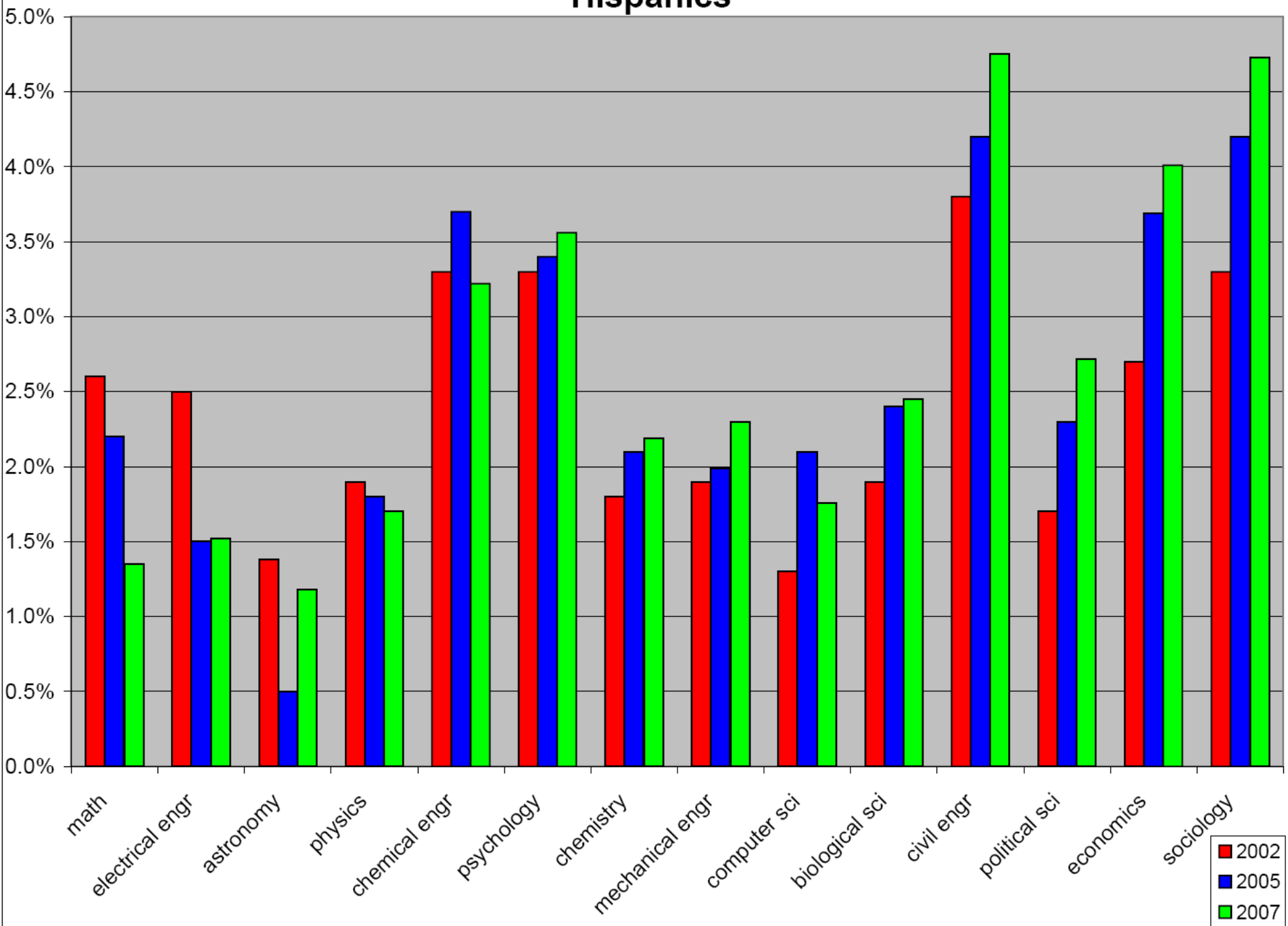
Blacks and Hispanics in the Academic Pipeline*

Discipline	Top 100 Departments 2007		
	Blacks	Hispanics	Asians (all)**
Chemistry	1.5%	2.1%	10.5%
Math	1.5%	1.7%	16.6%
Computer Science	0.9%	1.8%	27.1%
Physics	0.7%	1.8%	13.0%
Chemical Engr	2.1%	3.3%	17.8%
Civil Engr	1.8%	4.3%	17.3%
Electrical Engr	1.7%	1.7%	28.4%
Mechanical Engr	1.9%	2.0%	26.0%
Biological Sci	1.4%	2.5%	12.3%
Earth Sciences	0.9%	2.3%	6.6%

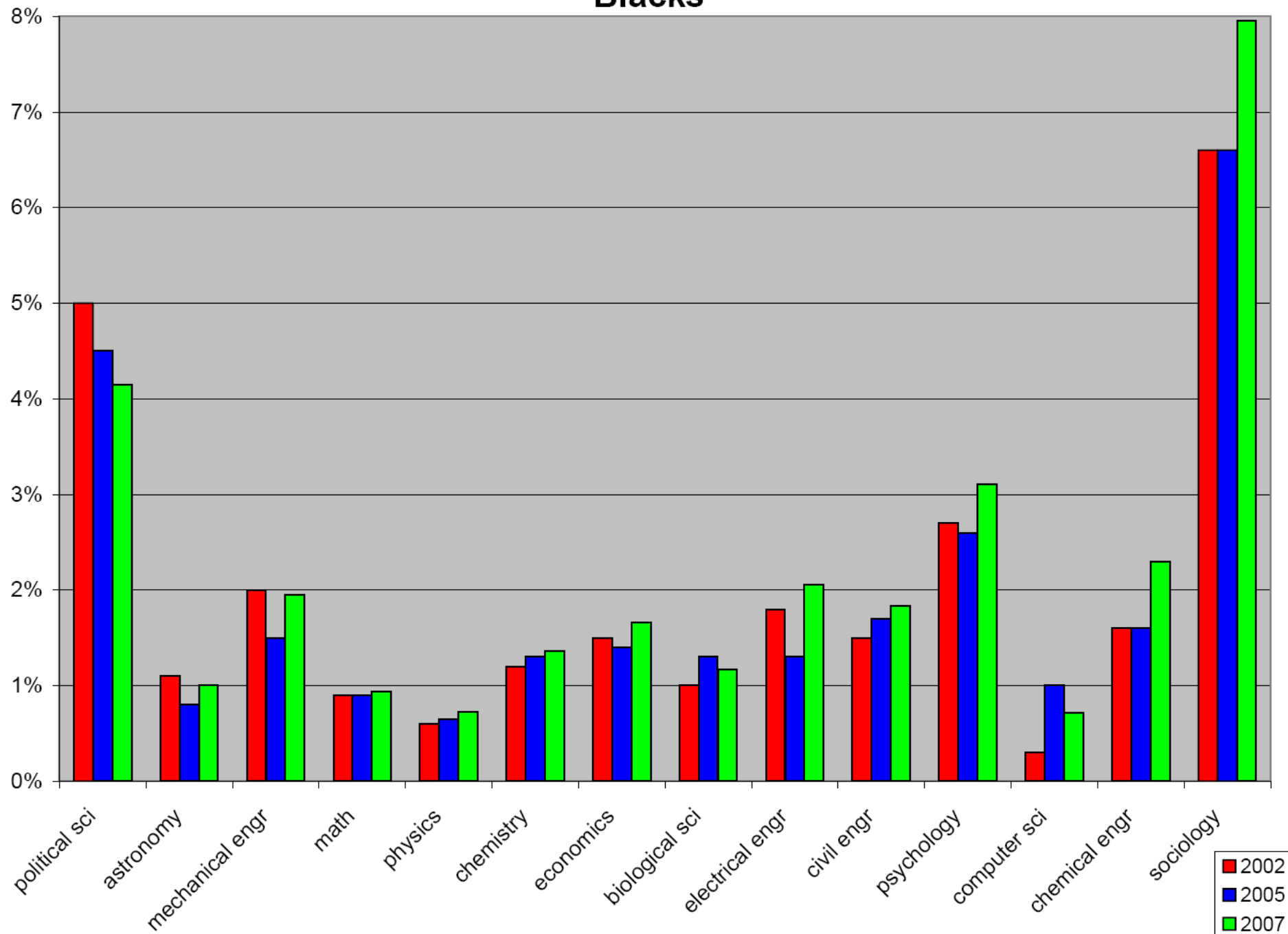
*Hispanics were 14.8% of the 2006 US population

**Asians were 4.4% of the 2006 US population

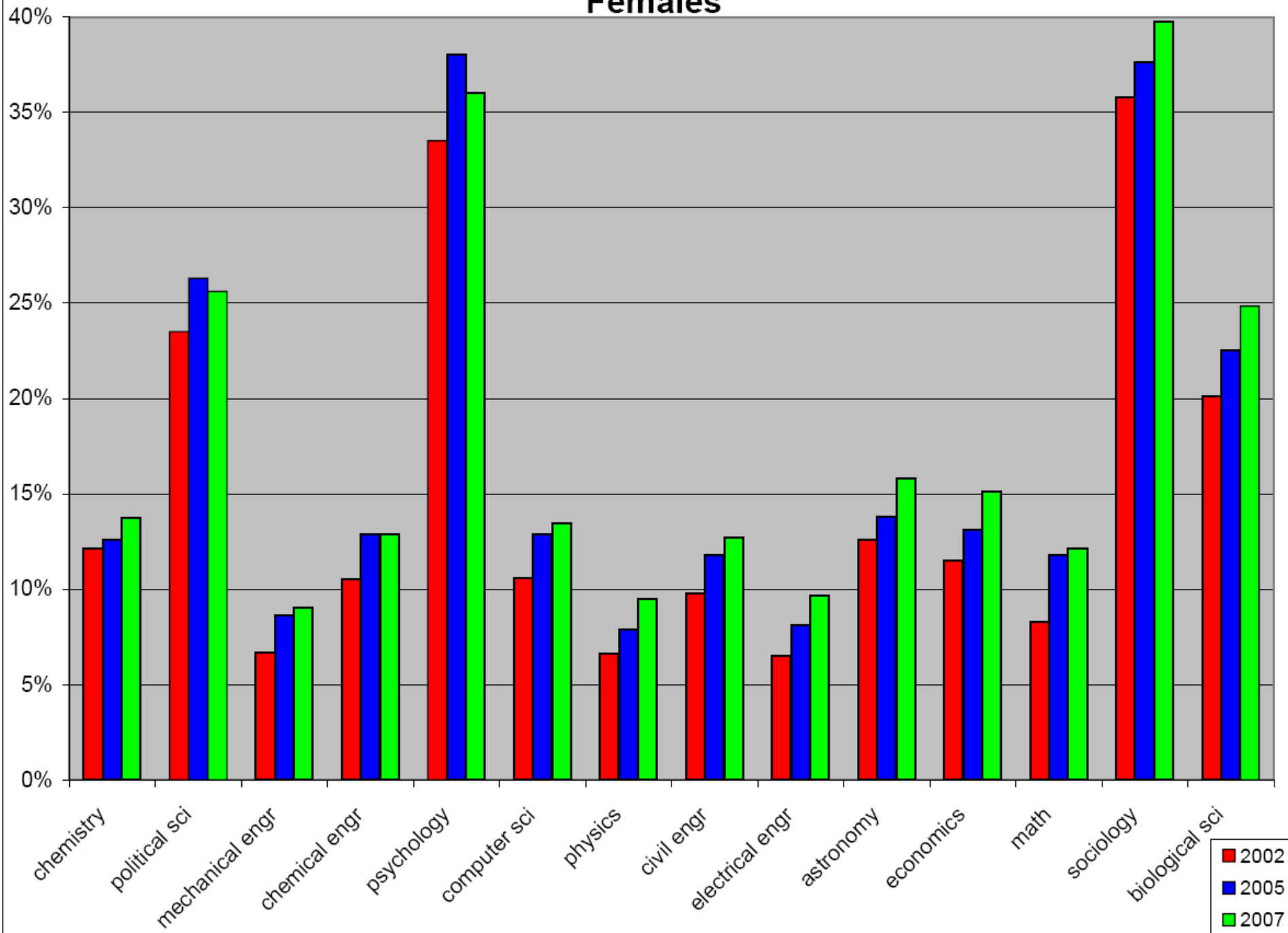
Hispanics



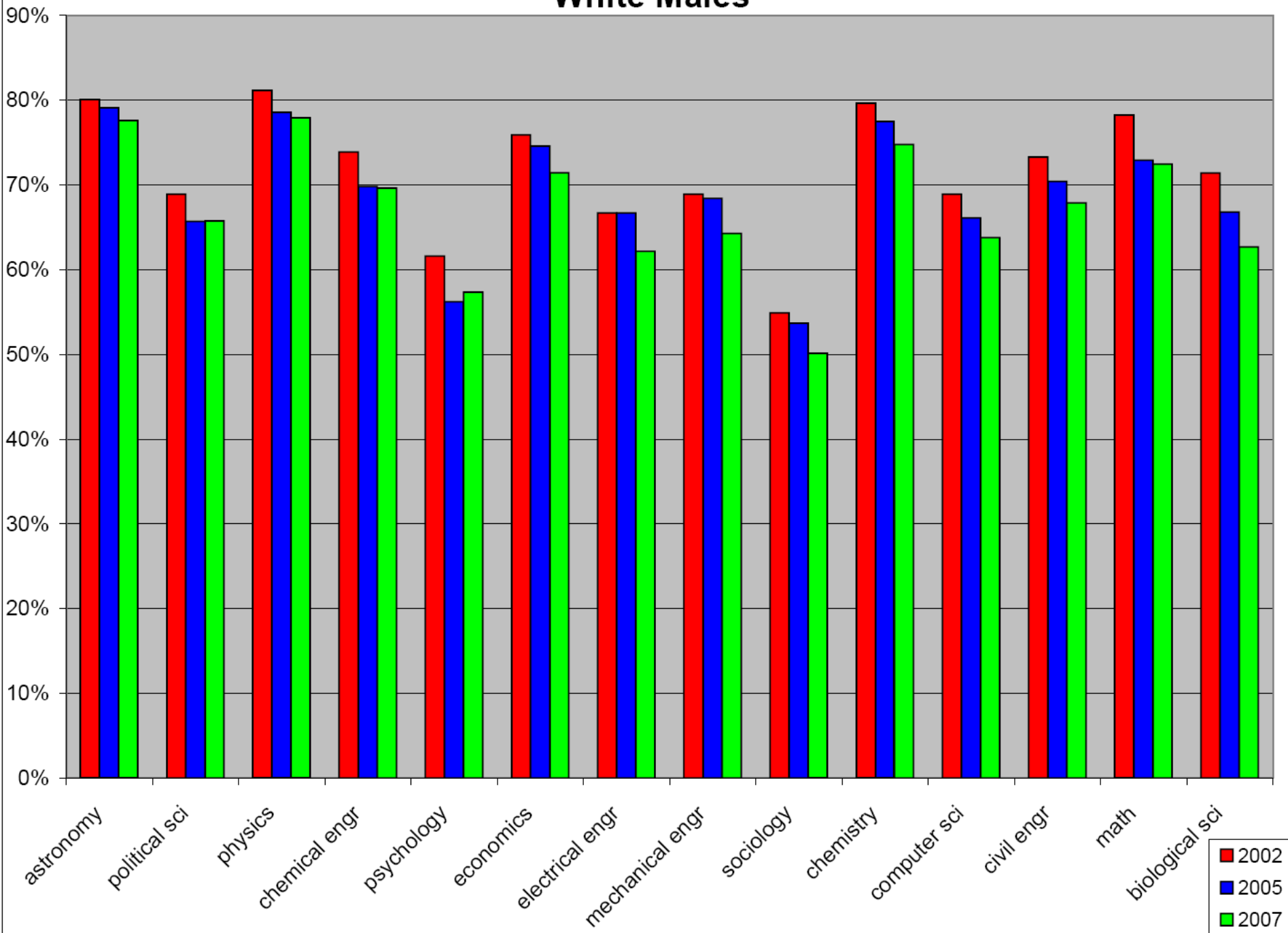
Blacks



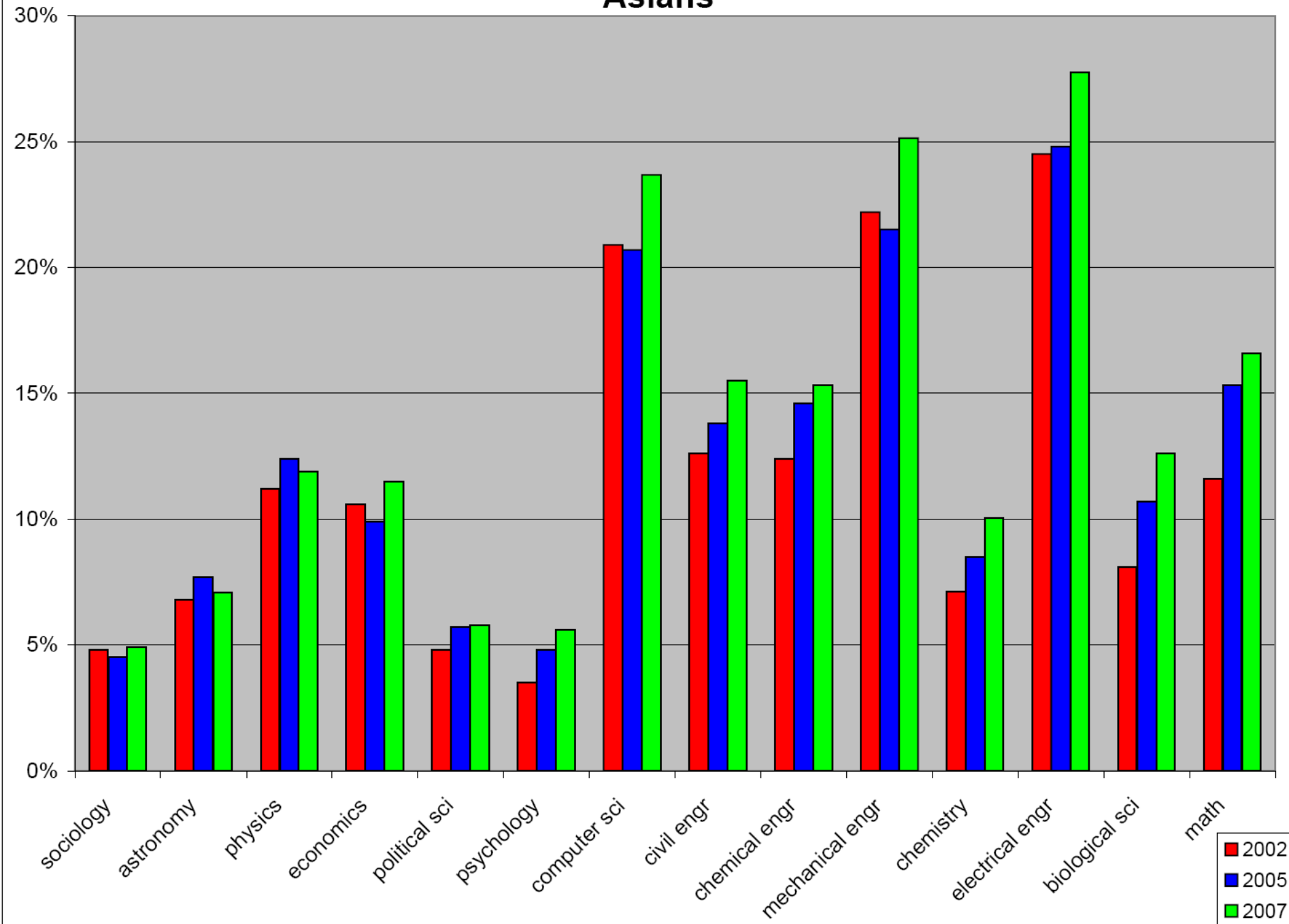
Females



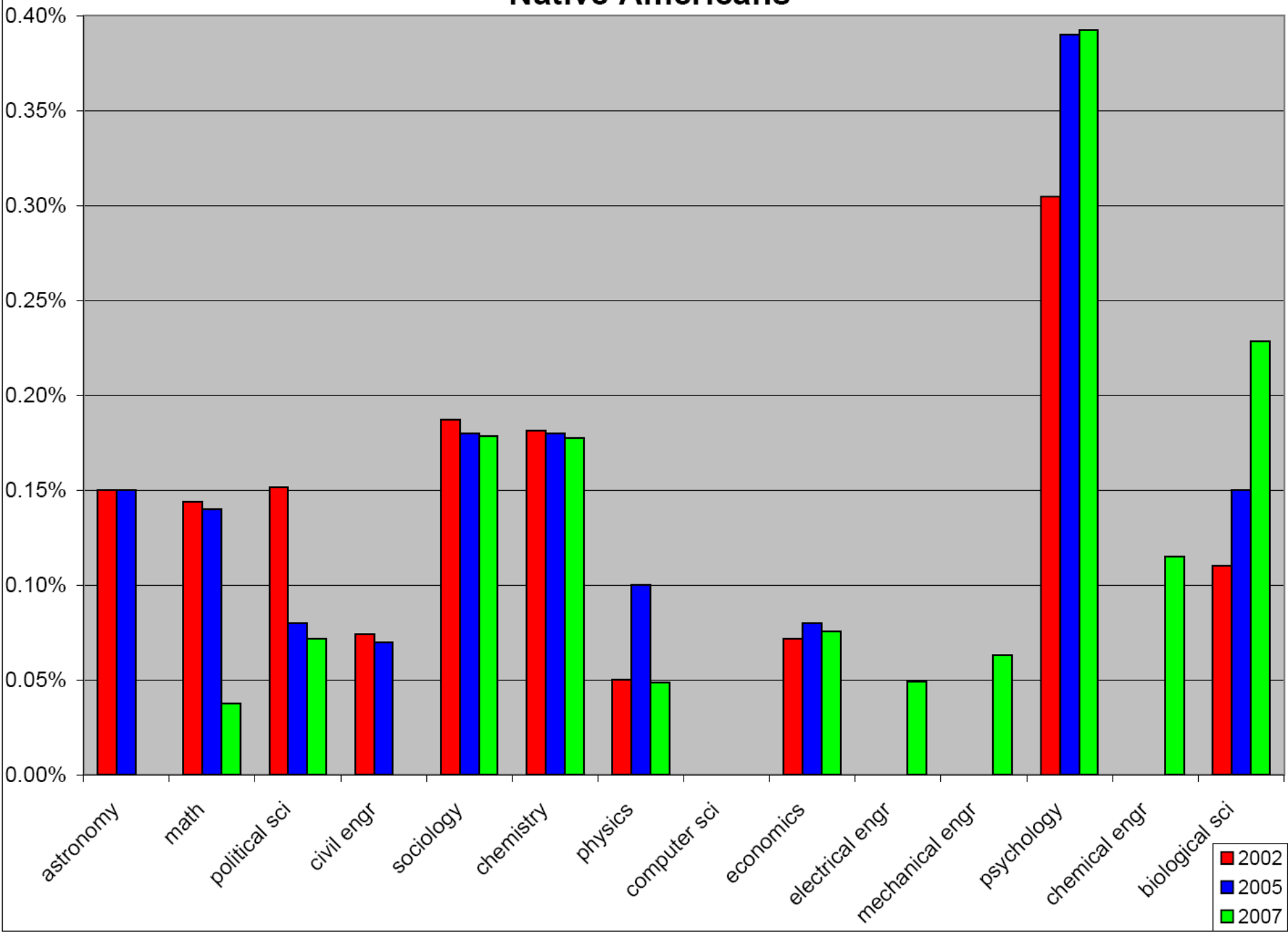
White Males



Asians



Native Americans



Faculty Representation in the Mathematical Sciences

Institution	Hispanic (domestic)	Black (domestic)
Rice University	3	1
Texas A&M University	2	0
University of Texas	2	0
University of California (all campuses)	0	0
All Ivy League Universities	1	1



Thoughts to Ponder



STEM Faculty Shortfall:
Non-Asian Domestics

STEM Faculty Longfall:
Foreign Asians



STEM minority student asks:

Will I be taught by someone who
looks like me?


Answer:

Do not expect it...



Minority math student:

“I took 8 math classes at UCLA, in just one of the eight I was taught by a domestic professor, let alone a minority.”



“Our concern with underrepresentation today does not stem from moral or ethical issues. Indeed, it is a simple matter of the nation’s survival. As such it is an issue of numbers, not of which group suffered the most. Underrepresentation endangers the health of the nation, and not the health of discipline.”

Things that Cause Us to Fail

- America's solution technique to correct for denied education has been to propose separate but equal activities.
 - ❖ Separate but equal is always separate but never equal.
 - ❖ Separate but (not) equal is destroying the country and will continue to do so if we do not change this way of doing business.

Example 1: Separate, But NOT Equal

The Formation of Texas Southern University

In 1946 Heman Sweatt (African American male) denied admission to University of Texas Law School because of race. He filed suit. Texas had no law schools for African Americans. The Texas trial court continued the case for six months, enough time to allow the state to take over Houston colored junior college, under Senate bill 140 of the 50th Texas legislature March 1947, named it Texas State University for Negroes, and built a law school. It later became Texas Southern University.

Example 2: Separate, But NOT Equal

University of Texas Pan American

1987 In *LULAC et al. v. Richards et al.*, MALDEF (Mexican American Legal Defense and Educational Fund) sued the State of Texas for discrimination against Mexican Americans in South Texas because of inadequate funding of colleges. Trial court held that there was discrimination. Texas Supreme Court unanimously reversed the trial courts decision. Border-area legislators continued the fight in Texas legislature. The small institutions in South Texas were admitted into the larger and powerful flagship University of Texas and Texas A&M University System.

Yet we still see separate but not equal.

More Proof of Separate, But NOT Equal

Example : University Funding

	Annual Budget Per Student	Endowment
Texas Southern University	\$9,000.00	23 Million
UT Pan American	\$13,000.00	29 Million
University Texas Austin	\$34,000.00	7.2 Billion
Rice University	\$84,000.00	3.6 Billion
For comparison purposes:		
Stanford University	\$185,000.00	12.6 Billion
Harvard University	\$181,000.00	26 Billion

More on Separate, But NOT Equal

- Blacks: 12 % of Texas population
- TX Tier 1 Institutions: Texas A&M: 3% Black, UT Austin: 5% Black, Rice: 7% Black
- HBCUs are 3% of the nation's institutions of higher learning; yet they produce 43% of Black undergraduate degrees in STEM disciplines
- Extremely low transfer rate from from HBCUs to Tier 1 graduate schools

Things that Cause Us to Fail

We depend too much on Minority Serving Institutions (MSIs) to solve the underrepresentation problem. All universities must be a part of the solution. Indeed, all individuals must play a role, we URMs can not do it alone.

Things that Cause Us to Fail

Critical concern: Low representation of domestic underrepresented minority graduate students in STEM departments at Tier 1 research universities.

The Loss of the Precious Few

Two Components:

- Minority Serving Institutions
- Tier 1 Institutions

The Loss of the Precious Few: Part 1

Minority Serving Institutions

The good STEM students at a minority serving institution:

- Perform well, maintain confidence and self-esteem
- Are encouraged to go to graduate school at Tier 1 schools
- Find their preparation for demanding graduate school deficient compared to other students
- Leave with masters degree

They are lost to research science.

The Loss of the Precious Few: Part 2

Research Universities

Minority STEM students who are accustomed to functioning with self-confidence encounter “sink or swim” culture and no support mechanisms at Tier 1 school

The Loss of the Precious Few: Part 2

Feeling “beat up” and losing confidence they:

- Migrate to non-STEM majors, or
- Continue in STEM, but strongly avoid graduate school.

They are lost to research science.

The Sad Reality

The Tier 1 minority STEM drop-out is better prepared for graduate school than the entering graduate student from a minority serving institution.

Reality of Domestic STEM Education

- Pedigree is alive and well.
- Top research universities choose faculty from Ph.D.s produced at top research universities.
- If we URM's are to be an effective component in U.S. STEM leadership, then we must have equitable presence as students and faculty at the top research universities.
- Number of degrees obtained by URM's alone is not a good measure of success. Degrees must be competitive with overall productivity.



Several Success Stories

Story Number One

The Carl Hayden High School Story

<http://www.wired.com/wired/archive/13.04/robot.html>





What did we learn from the Carl
Hayden success?

Talking Point

- Underrepresented minorities can be very innovative and successful with good leadership.
- For underrepresented minority youth it is a demand problem, not a supply problem.
(Dean Kamen and First)

Story Number Two

The Texas Top 10% Rule

An Undergraduate Success

University of Texas Austin – 30% STEM URM in Math
Why?

- The Texas Top 10% Rule (HB 588 – 1997)
- Innovative support programs in mathematics
- Good Things for Bad Reasons



What can we learn from the
University of Texas success?

Talking Point

Fine-tuning does not lead to significant changes. Major perturbations can make significant changes.

No self-respecting academician would have initiated or would have endorsed the Texas Top 10% Rule

Story Number Three

Rice University Department of
Computational and Applied Mathematics (CAAM)



Rice University - CAAM

- American Mathematical Society
Award given to the CAAM department
(2010)
- 35 URMs in the last 25 years 1986:
four at Rice out of eight in the country

Story Number Four

Arizona State University

“In mathematics and statistics, ASU ranks first in the nation for doctoral degrees awarded to Hispanics. In the same category last year, ASU was ranked first for master’s degrees to Hispanics in math, indicating that many progress to a doctoral degree.”

Story Number Four

Arizona State University

From 1967-2005, ASU math graduated only two Latinos:


Joaquin Bustoz Jr (1967)

And a woman from Puerto Rico (1997)

Over the past six years, they have graduated 16.



What can we learn from the Rice and Arizona State Successes?



Large improvement in representation in departments in Tier 1 institutions is possible, but it takes effort, commitment, and leadership, and a champion.

Rice University: Richard Tapia

Arizona State University: Carlos Castillo-Chavez

Story Number Five

Rice Athletic Program

Rice University graduates 92% of its athletes, the highest in the nation.

We have a well structured tutorial and mentoring machine championed by Julie Griswold and paid for by the Rice Administration. It is an incredible machine.

What have we learned
from these successes?

It can be done.

The country can be saved, but we must
change the way we do things.

What Must We Do?

Begin by combating THE LOSS OF THE PRECIOUS FEW at Tier 1 universities

Recall:

- They migrate away from STEM majors.
- They choose not to go to graduate school.

A feasibility point: my Rice programs

Rice University

BPC (Broadening Participation in Computing)

ELA (Empowering Leadership Alliance)

600 students nationally

60 students at Rice

Theme: Minorities at Majority Schools: Retention
in the STEM major

Strong faculty mentoring and building of
supportive community.

Rice University

AGEP

(NSF Alliance for Graduate Education and the
Professoriate)

A well-oiled and well-respected machine

65 current students

6 NSF graduate fellowship in past 5 years

75 URM Ph.Ds on past 15years

What Must We Do?

Implement accountability for activities counter to the accepted mission.

Hold individuals, departments, and universities accountable.

State and National Shame

- UCLA and Berkley in math have few minority undergraduate majors, essentially no graduate majors, and no minority faculty. Yet California has the largest minority population in the country.
- If a public flagship university is not responsible to the needs of the state, then both state and national funding should be cut.
- How about other public universities?

What Must We Do?

Update and improve traditional evaluation systems

- Developed on traditional groups.
- It is not that “bad” people are accepted, it is that potentially successful people are not accepted.
- Accept those that should succeed and help them to succeed.

Closing Statement

Your credentials precede you. They promote credibility and open doors.

“Tapia can’t be a total turkey.”

Be a professional who happens to be a minority, not a professional minority.