



PATHWAYS AND ECOSYSTEMS: *UNDERSTANDING WHAT HELPS YOU SUCCEED*

BENJAMIN C. FLORES, PH.D.

LEWIS PROFESSOR OF ELECTRICAL ENGINEERING, THE UNIVERSITY OF TEXAS AT EL PASO
DIRECTOR, UNIVERSITY OF TEXAS SYSTEM LOUIS STOKES ALLIANCE FOR MINORITY PARTICIPATION

DO YOU RECOGNIZE THIS GENTLEMAN?



Politician, attorney and civil
rights champion **Louis Stokes.**

- Raised by his mother
- Inducted into the United States Army and served in World War II.
- Enrolled in Case-Western Reserve University
- Earned his doctor of laws degree from Cleveland Marshall Law School
- Elected to the United States Congress in 1968
- First African-American congressman from Ohio
- Served fifteen consecutive terms in the U.S. House of Representatives.



NATIONAL SCIENCE FOUNDATION *LOUIS STOKES* ALLIANCE FOR MINORITY PARTICIPATION PROGRAM



ABOUT ME

- First-generation college student
- First-generation American
- Born on the US-Mexico border
- Raised by a single mother
- Spanish native speaker
- Math and Physics HS Club
- Rode my bicycle to college from home
- Worked on campus
- Graduated with highest honors, \$0 debt
- Had no idea of how much I was worth and had no plans after graduation



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MY PROFESSIONAL TRAJECTORY

- HS, BSEE, MSEE, Ph.D. (13 years pathway)
- Professor of Electrical Engineering since 1990
- Visiting Scientist, Principal Investigator
- First Mexican-American Department Chair, Associate Dean, First Mexican-American Dean of the Graduate School
- Presidential Award for Excellence in Science, Mathematics, Engineering Mentoring
- Sleeping on my laurels ever since

GETTING TO KNOW YOU: NM AMP STUDENT COMMUNITY

- Community College
- University
- Native American, Alaska Native, or Pacific Islander
- African American or Black
- Hispanic, Latino/a, Mestizo
- White Non-Hispanic
- Bilingual or Multilingual

HW: get to know each other!



KEY WORDS

- *STEM And Non-STEM*
- *Pathways*
- *Metrics*
- *Identity*
- *Intersectionality*
- *Learning Ecosystem*
- *Social Wealth*

CAREER PATHWAYS



Source:

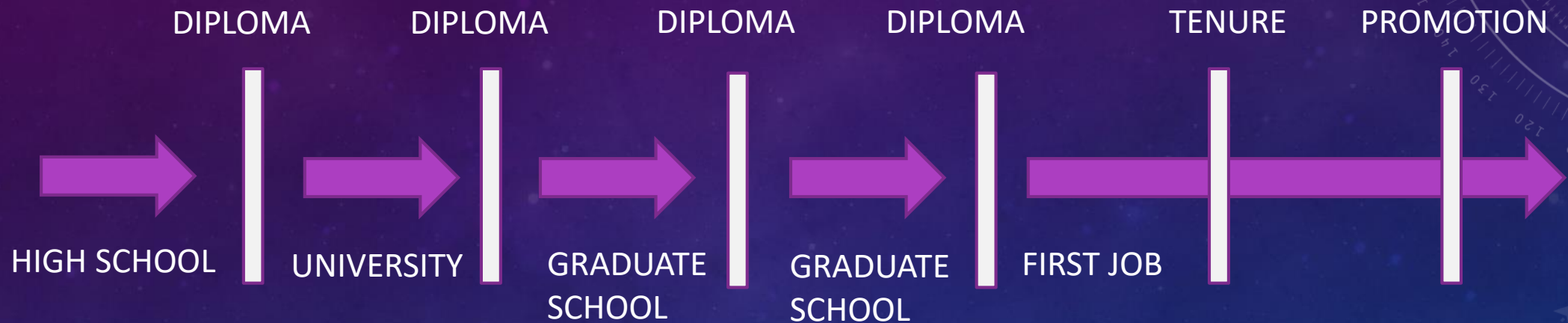
<https://www.psychologytoday.com/us/blog/tech-happy-life/202208/so-youre-looking-to-change-here-are-the-5-pathways>

“Many of us, through absolutely no fault of our own, have the cards stacked against us.”

“No matter our starting point and no matter what hardships we encounter in life, there is always room for growth.”

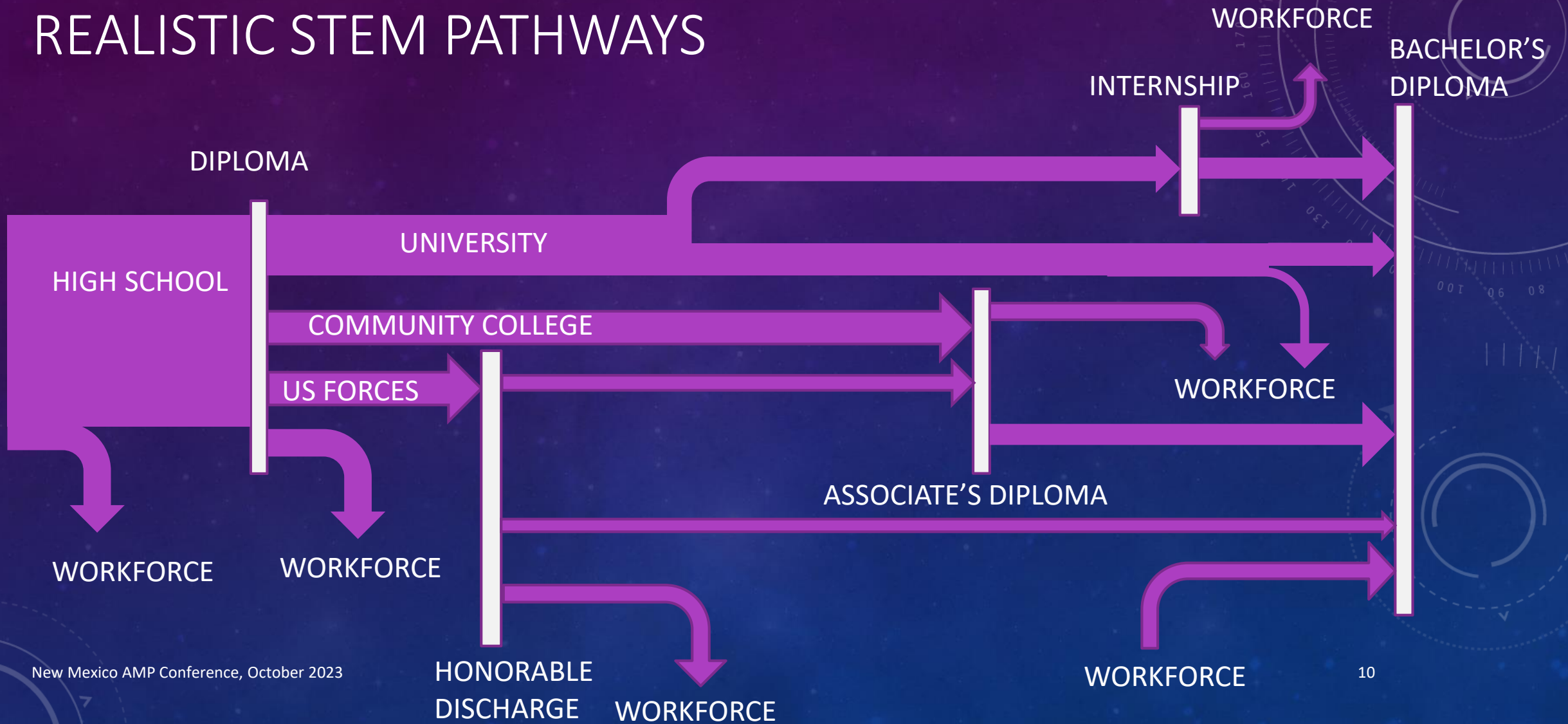
And there will always be people willing to help you grow...

A THEORETICAL PATHWAY: THE PAPER CHASE



OVERSIMPLIFIED!

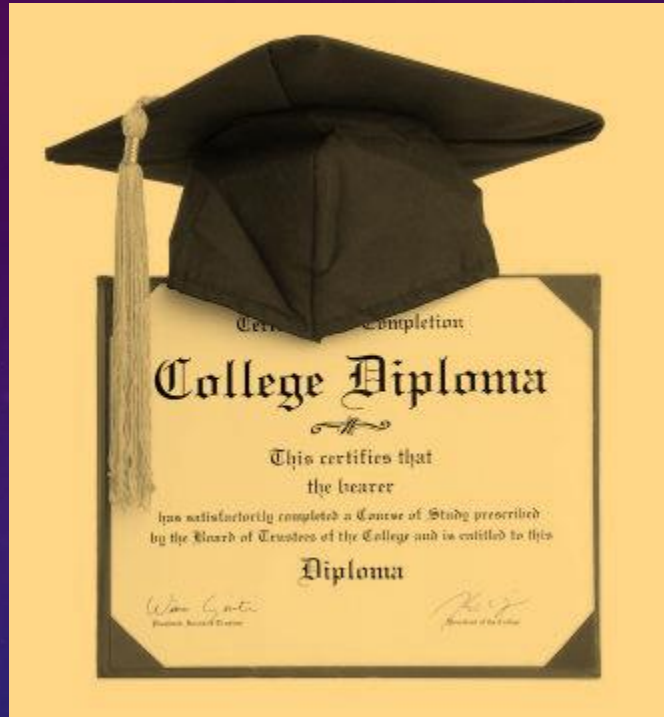
REALISTIC STEM PATHWAYS



PATHWAYS TO THE BS: TRADITIONAL METRICS

- First-Time Full-Time Fall-Entering Enrollment
- Fall Returning Enrollment
- Fall Transfer Enrollment
- First-Year Retention Rate
- Four-Year Completion Rate for FTFTFE Students
- Six-Year Completion Rate for FTFTFE Students
- Years to Degree
- Degrees Awarded





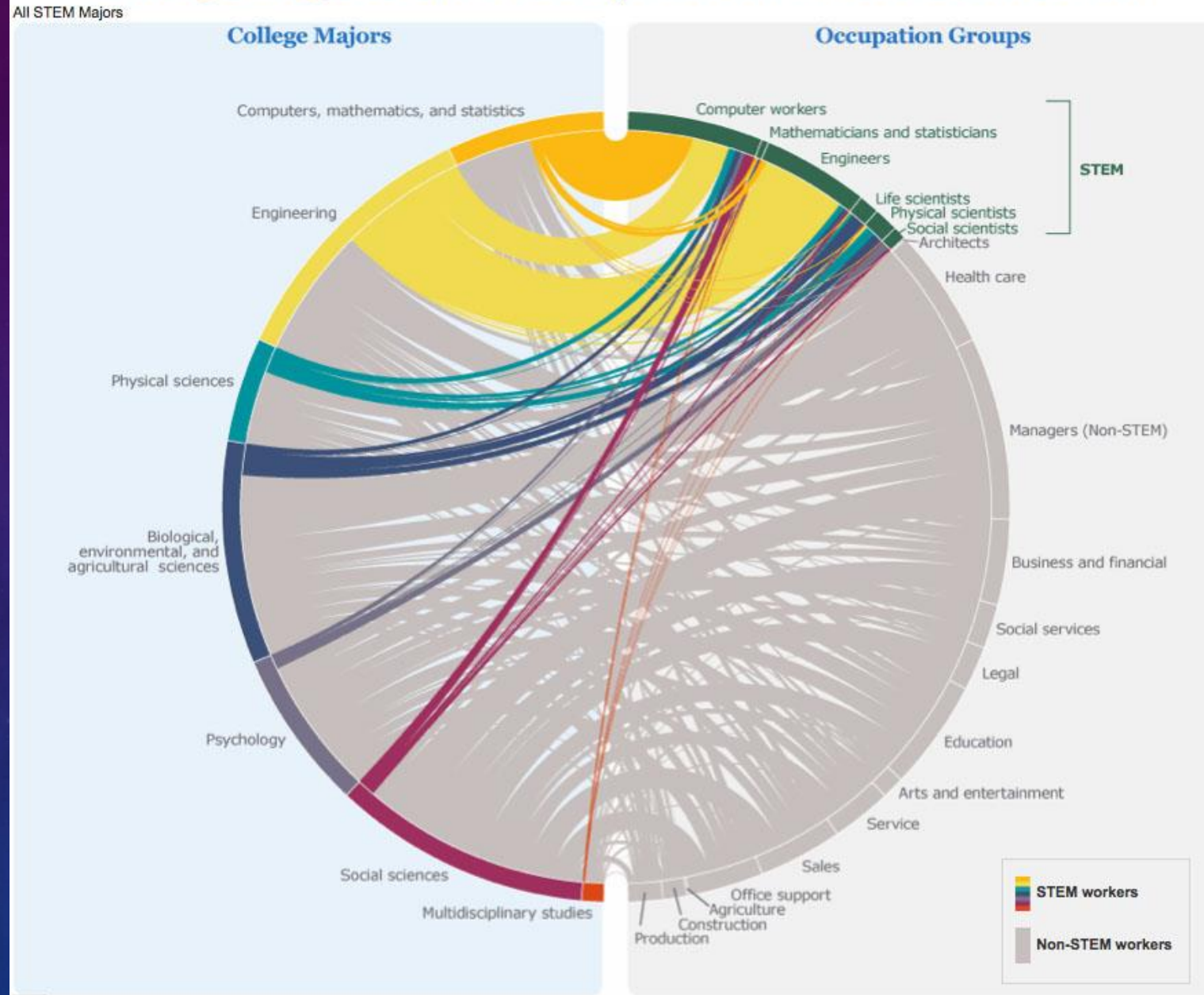
ONCE YOU GET YOUR COLLEGE DIPLOMA...
WHAT COMES NEXT?

THE MAJORITY OF STEM GRADUATES GO INTO NON-STEM OCCUPATIONS

Skill Sets
Sense of Belonging
Long Term Goals
Something Else

New Mexico AMP Conference, October 2023

College Majors and Occupations: A focus on STEM

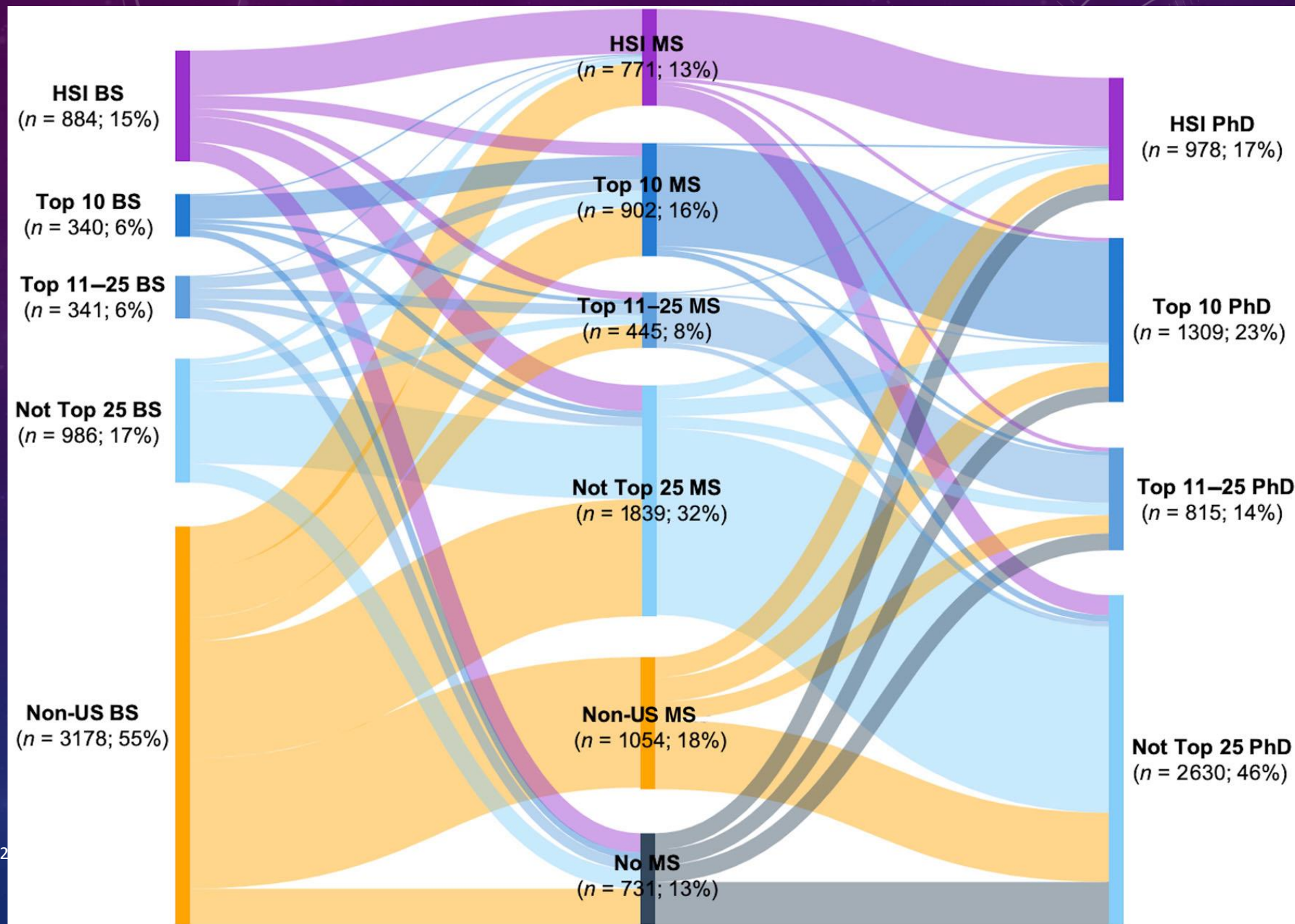


Based on 2012 data.

Data & image from US Census Bureau: <http://www.census.gov/dataviz/visualizations/stem/stem-html/>

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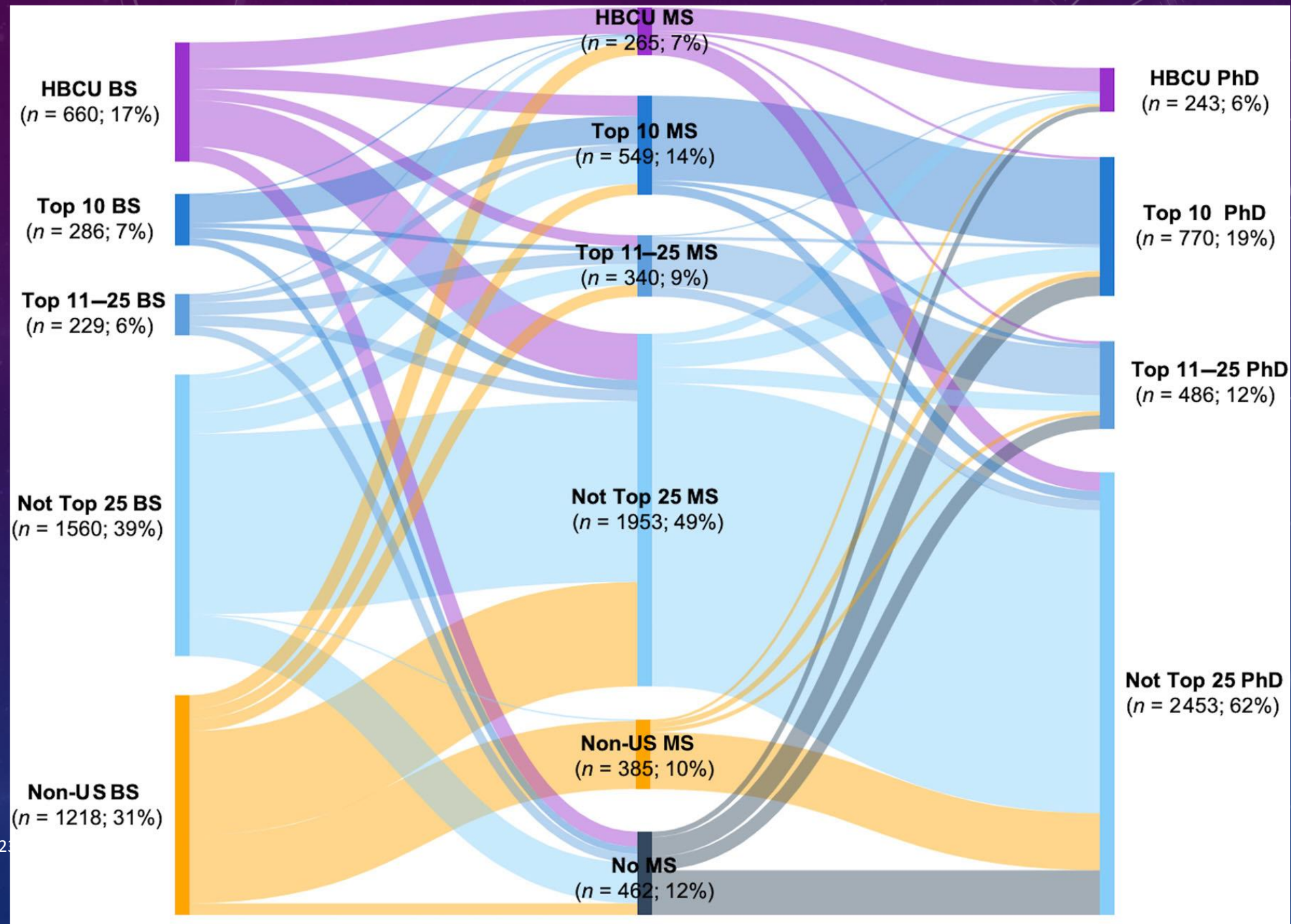
PATHWAYS TO THE PH.D. FOR HISPANIC AMERICANS



PATHWAYS TO THE PROFESSORiate FOR HISPANIC AMERICANS



PATHWAYS TO THE PH.D. FOR AFRICAN AMERICANS



PATHWAYS TO THE PROFESSORiate FOR AFRICAN AMERICANS



THE FALLACY OF “THERE ARE NO CANDIDATES”: INSTITUTIONAL PATHWAYS OF BLACK/AFRICAN AMERICAN AND HISPANIC/LATINO DOCTORATE EARNERS

GABRIELLA COLOYAN FLEMING, ANITA D. PATRICK, DUSTIN GROTE, MAYA DENTON, DAVID KNIGHT, WALTER LEE, MAURA BORREGO, HOMERO MURZI

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<https://onlinelibrary.wiley.com/doi/full/10.1002/jee.20491>

WORD OF THE DAY: INTERSECTIONALITY

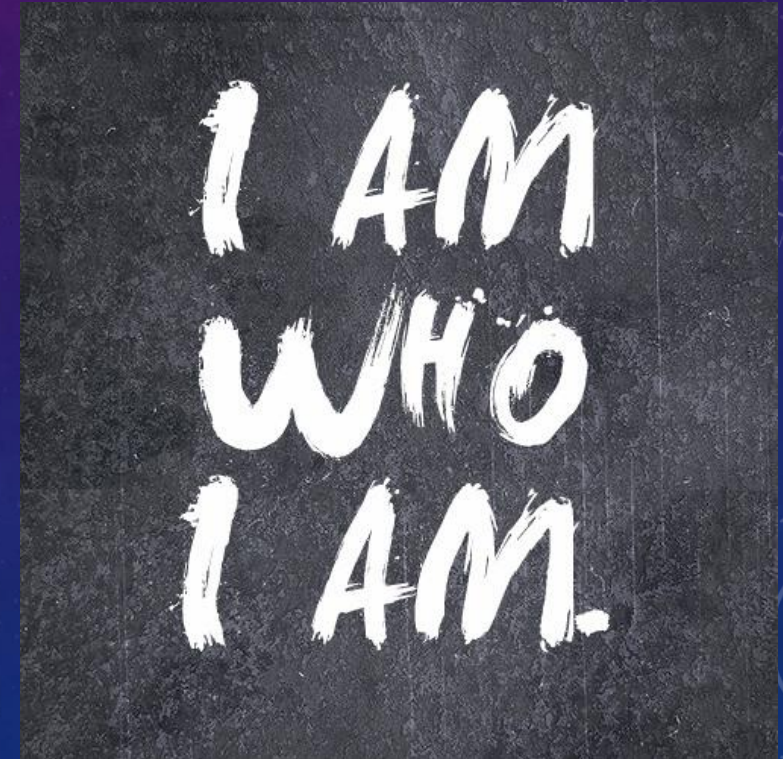
- Intersectionality is a framework for understanding our various social and political identities.
- Intersectionality identifies multiple factors that may lead to advantages and disadvantages in society.
- Examples of these factors include gender, sex, race, ethnicity, class, sexuality, religion, disability, weight, and physical appearance.



This is me. I'm a Mestizo who knows his self and social wealth.

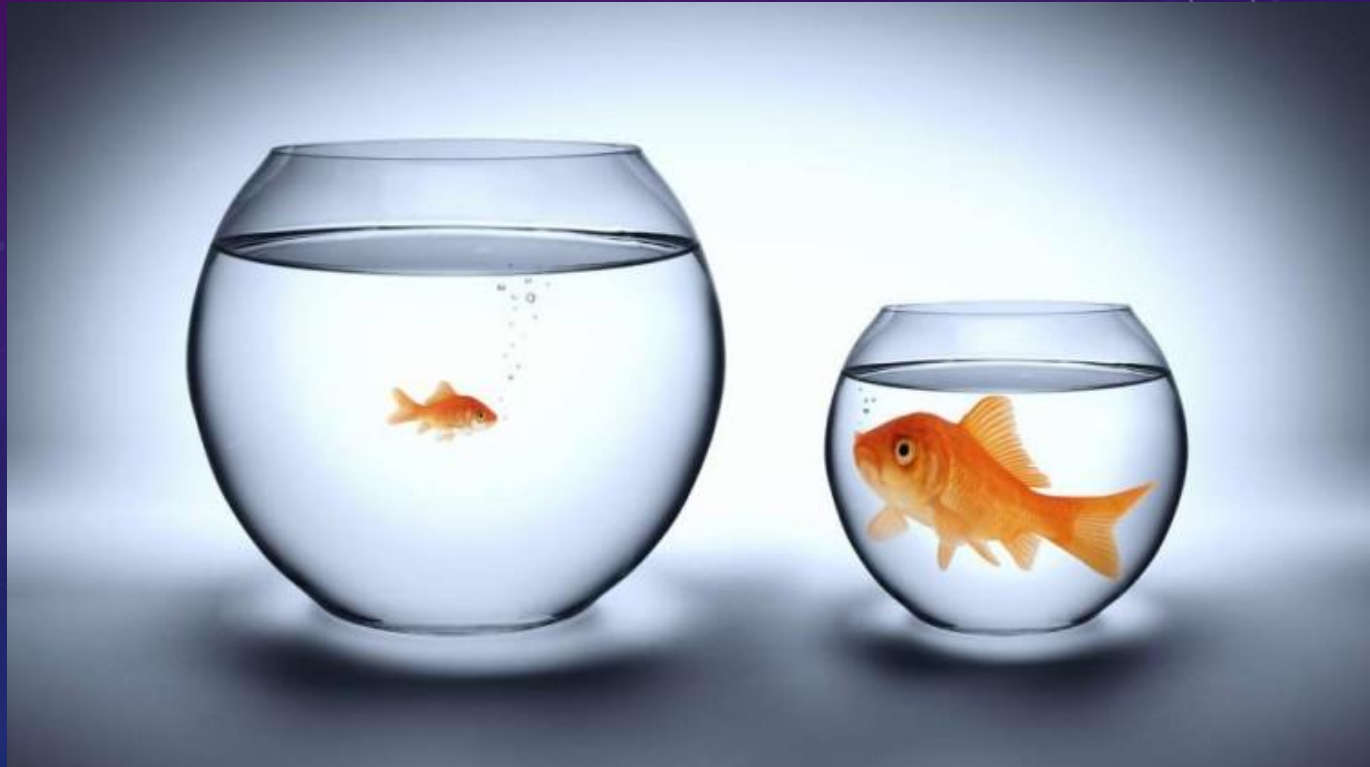
WHAT ARE YOUR IDENTITIES?

- Generation: X/Millennial/Z/ALPHA
- Race/Ethnicity: WNH/URM
- Gender: M/F/Non-Binary
- Service: Civilian/Military/Veteran
- Disability: Visible/Invisible
- College: First/Second/Legacy



WHY IS THIS IMPORTANT?

To understand who
you are and your
surroundings
(ecosystem)



Small Fish in a Big Pond or Big Fish in a Small Pond

ECOSYSTEM

The word “ecosystem” comes from the study of the interactions between living things and their environment. The ecosystem is the sum of living things and non-living things.

In an educational setting, the term learning ecosystem is used as a way to describe how different components interact within a learning environment.



<https://www.nationalgeographic.org/activity/sorting-gulf-ecosystem/>

LEARNING ECOSYSTEM

- Professors and students
- Peer organizations
- Advisors and college staff
- Recruiters
- Friends
- Family
- Employers
- Curriculum
- Classrooms and Laboratories
- Library and Tutoring Center
- Digital learning tools
- Space for studying and socializing
- Coffee Shop and eating places
- Health Center



CAN YOU DESCRIBE YOUR RELATIONS IN YOUR STEM LEARNING ECOSYSTEM?

TRUSTING AND SUPPORTIVE

DOUBTING OR DISCOURAGING

WHO MAKE UP YOUR HIGH-TRUST RELATIONSHIPS?

Parents
Partner
BFF
Mentor
Spiritual leader

THINK OF THEM AS
YOUR SOCIAL
WEALTH (CAPITAL)

THE NATURE OF WEALTH

Material Wealth

- Personal Capital
- Membership Capital

Embodied Wealth

- Physical and Mental Health
- Productive Skills and Knowledge

Relational Wealth

- Social Ties

Mulder MB, Beheim BA. Understanding the nature of wealth and its effects on human fitness. *Philos Trans R Soc Lond B Biol Sci*. 2011 Feb 12;366(1563):344-56. doi: 10.1098/rstb.2010.0231. PMID: 21199839; PMCID: PMC3013473.

CONCLUDING REMARKS

1. The pathways to success can be complex and take on many forms.
2. Navigating your pathways should not be left to chance or fortune.
3. You are not a number. You are who you are.
4. Understand your learning ecosystem. Develop relationships.
5. Embodied wealth will get you the job. Without social wealth, you may not keep your job.



IN MEMORIAM

Dr. Ricardo B. Jacquez was a founding member of the National LSAMP Community. He was a Professor of Civil Engineering who served as Department Head, Associate Provost, and Dean of Engineering at NMSU.

Throughout his career, Dr. Jacquez had a passion for helping others, especially students and young faculty. He was the founding advisor for the Society of Hispanic Professional Engineers student chapter at NMSU and founding director of the National Science Foundation's (NSF) Louis Stokes New Mexico Alliance for Minority Participation, which works to improve the diversity and graduation rates of underrepresented students in Science, Technology, Engineering, and Mathematics (STEM) at New Mexico's colleges and universities.

In 2007, the White House honored him with the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring — just one of many awards in Jacquez's life that recognized his passion and professional success.



Ricardo B. Jacquez (1958-2018)

Your spirit lives on in our hearts and in our actions.

THANK YOU!

Benjamin C. Flores

bflores@utep.edu

<https://www.utep.edu/engineering/lsamp/>

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