Movement to improve Diversity, Equity, and Inclusion (DEI) in the American Physical Society - Division of Plasma Physics: An Evidence Based Approach

David Newman UAF Physics/APS

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What is diversity

- The various "things" we use to identify ourselves and others including:

  race, gender, ethnicity, gender identity and expression, socio-economic status, nationality, citizenship, religion, sexual orientation, ability, and age.

- Note: some of these in a particular diversity context are associated with a "minority" group, others might be an under represented group

What is equity and inclusion

Equity: The guarantee of fair treatment, access, opportunity, and advancement for all while striving to identify and eliminate barriers that have prevented the full participation of some groups. The principle of equity acknowledges that there are historically under-served and under-represented populations and that fairness regarding these unbalanced conditions is needed to assist equality in the provision of effective opportunities to all groups.

For example the "Equal Pay for Women campaign" which is based in part on equity, as women have historically been under paid and under represented in executive roles.

Inclusion: Authentically bringing traditionally excluded individuals and/or groups into processes, activities, and decision/policy making in a way that shares power and ensures equal access to opportunities and resources.

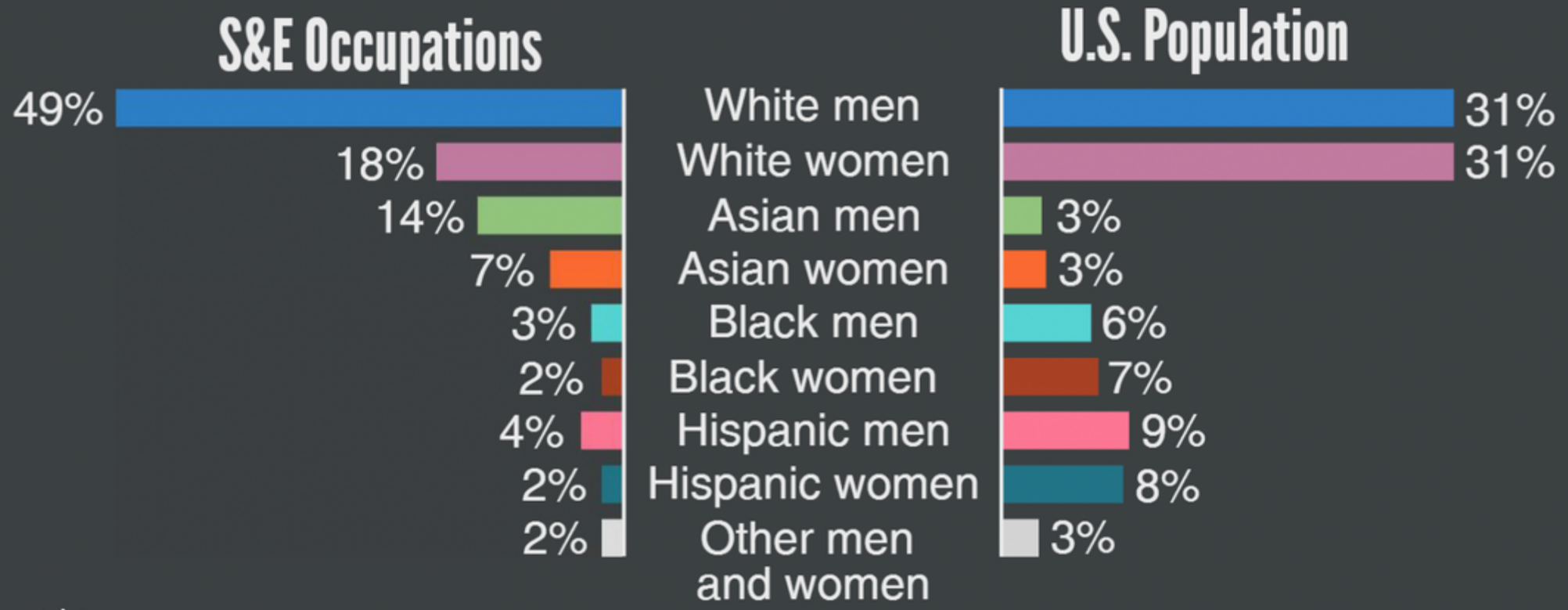
Diversity advocate Verna Myers coined the phrase "Diversity is being invited to the party. Inclusion is being asked to dance." As an an example of inclusion, consider the student encouraged to attend a career fair, only to arrive a learn that she can not meet with certain recruiters because the facility is not fully wheelchair accessible.

Taken from:
https://community.naceweb.org/blogs/karen-armstrong1/2019/06/25/what-exactly-is-diversity-equity-and-inclusion

Is it a problem?

Workers in science and engineering occupations

In 2015, women and some minority groups were represented less in science and engineering (S&E) occupations than they were in the U.S. general population.



Source: National Center for Science and Engineering Statistics, National Science Foundation
Women, Minorities, and Persons with Disabilities in Science and Engineering: 2017
https://nsf.gov/statistics/wmpd/

Why is it a problem?

- We are losing a large fraction of our best:
  - Minds
  - Ideas
  - Approaches
  - Dynamics
- Different backgrounds => different perspectives ... new ways of looking at things ... finding and solving problems
- Societal good

At Least 3 major issues

- entraining
- retaining
- promoting

What we (APS-DPP) have been doing

Formed advocacy/support groups/committees:

- WIPP (a few decades ago) now W+IPP
  Luncheon, reception, speakers, alley training, stories (words matter)
- Diversity Equity and Inclusion Organizing Collective Committee (5 years ago)
  This will be largely about the DEI work
- LGBT+ committee (~3 years)
- BIPOC
- Data collection

Code of conduct, town hall meetings, Now Evidence-Based Practices approach (SMEs)

Words matter

Some personal anecdotes:
WIPP founding
Personal pronouns
WIPP Panel
WIPP Stories
Support don't tell

APS membership - Diversity depends on sub-discipline (but overall not good)

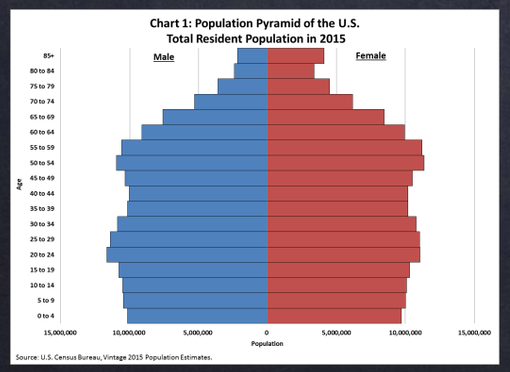
UNIT MEMBERSHIP STATISTICS (Run date: 1/17/2018 - Differs Slightly from Official Counts)

Unit Name	Total #	Regular	Regular Fellow**	Senior	Senior Fellow**	Student	Student Male **	Student Female**	Early Career	All Life	Life Fellow**	Total # Male	% of Unit	Male Fellow	% of Fellows	Total # Female	% of Unit	Female Fellow	% of Fellows	Gender Not Avail
DIVISIONS																				
DAMOP	3,303	1,149	383	192	100	1,568	1,138	281	143	251	128	2,662	80.59%	561	16.98%	427	12.93%	43	1.30%	214
DAP	3,053	1,018	326	187	78	1,534	1,025	408	96	218	91	2,300	75.34%	419	13.72%	597	19.55%	66	2.16%	156
DBIO	2,170	743	221	74	36	1,095	682	332	92	166	67	1,543	71.11%	285	13.13%	486	22.40%	34	1.57%	141
DCMP	6,749	2,134	744	327	173	3,473	2,635	534	224	591	277	5,485	81.27%	1,067	15.81%	810	12.00%	99	1.47%	454
DCOMP	3,178	866	273	92	42	1,941	1,496	312	112	167	71	2,572	80.93%	340	10.70%	421	13.25%	37	1.16%	185
DCP	1,627	718	288	145	63	551	378	138	58	155	79	1,295	79.59%	372	22.86%	252	15.49%	50	3.07%	80
DFD	3,381	1,141	229	103	47	1,766	1,375	303	223	148	54	2,768	81.87%	308	9.11%	439	12.98%	17	0.50%	174
DGRAV	1,697	628	179	122	45	734	562	119	69	144	66	1,414	83.32%	254	14.97%	203	11.96%	31	1.83%	80
DLS	1,553	670	222	58	28	629	436	124	58	138	83	1,106	71.22%	290	18.67%	208	13.39%	32	2.06%	239
DMP	3,321	967	407	109	64	1,948	1,402	401	75	222	113	2,556	76.96%	504	15.18%	552	16.62%	63	1.90%	213
DNP	2,689	1,201	357	250	122	932	688	190	101	205	99	2,206	82.04%	529	19.67%	372	13.83%	43	1.60%	111
DPB	1,203	719	256	123	52	185	134	40	38	138	57	1,031	85.70%	329	27.35%	121	10.06%	33	2.74%	51
DPF	3,515	1,517	523	339	146	1,235	954	202	93	331	150	2,979	84.75%	739	21.02%	386	10.98%	73	2.08%	150
DPOLY	1,525	574	168	54	34	721	477	190	101	75	40	1,125	73.77%	217	14.23%	299	19.61%	22	1.44%	101
DPP	2,618	1,251	356	210	86	814	611	123	149	194	82	2,219	84.76%	490	18.72%	237	9.05%	26	0.99%	162
DQI	2,145	580	113	27	11	1,312	1,026	189	153	73	29	1,739	81.07%	139	6.48%	263	12.26%	10	0.47%	143

US population

male 160.93 mil (49.8%)

female 167.5 mil (50.2%)



APS DPP members

male 2219 (~90%)

female ~237 (10%)

total 2618 (2456)

APS DPP Fellows

male 490 (95%)

female 26 (5%)

total 516

Physics Faculty => getting better but still a ways to go

Percentage of Physics Faculty Members Who Are Women

	Year			
	1998	**2002**	**2006**	**2010**
by Academic Rank	(%)	(%)	(%)	(%)
Full Professor	3	5	6	8
Associate Professor	10	11	14	15
Assistant Professor	17	16	17	22
Instructor / Adjunct	*	16	19	21
Other ranks	13	15	12	18
by Highest Degree Offered by Department	(%)	(%)	(%)	(%)
PhD	6	7	10	12
Master's	9	13	14	15
Bachelor's	11	14	15	17
OVERALL	**8**	**10**	**12**	**14**

The year in the table refers to the spring semester; for example, 2010 represents the 2009-10 academic year.

* These data were not collected in this survey year.

http://www.aip.org/statistics

From AIP 2013 report:

Women among Physics & Astronomy Faculty

Results from the 2010 Survey of Physics Degree-Granting Departments

Rachel Ivie, Susan White, Arnell Garrett, and Garrett Anderson

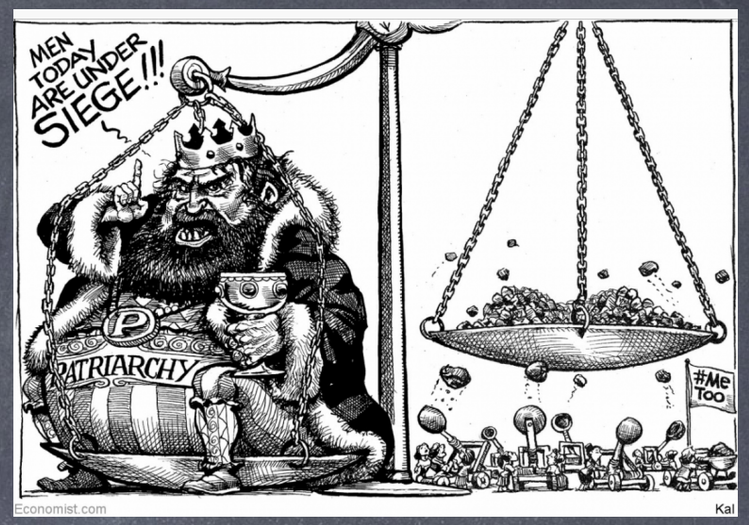
Physics Faculty => getting better but still a ways to go

Race and Ethnicity of Physics Faculty Members, 2004-2016

	Physics				All Disciplines*
	2004 (%)	2008 (%)	2012 (%)	2016 (%)	2015 (%)
African-American	2	2.2	2.1	2.5	6
Asian	10.6	13.2	14.3	15.2	10
Hispanic	2.7	3.1	3.2	3.8	4
White	82.2	80	79.2	76.3	77
Other	2.2	1.5	1.2	2.3	<2

*Data for all disciplines (including non-science disciplines) is located at: https://nces.ed.gov/fastfacts/display.asp?id=61

Problems



- Behaviour (sexist/racist/...ist)
- Bias (implicit or overt)
  - https://implicit.harvard.edu/implicit/selectatest.html
- "Old boys club" - funding, talks, nominations
- Expectations (cultural differences)
  - performance => bibliometric differences
  - team vs prima donna (loaded word ... sorry)
- Entitlement
  - CERN talk (Professor Alessandro Strumia - "men are the victims of sexism")... but backlash (letter from over 200 physicists)

- From early on - elementary school on ... cultural expectations/norms ... home, guidance counselors, teachers ...

Solutions?

- Role models - mere existence and modeling
- Mentoring - all levels, who
- Affinity Groups
- Workshops
- Guidelines and access (personal pronouns, childcare, rules of behavior ... etc)
- Quotas??

- what about changing culture?
  - who? women, men, junior people, senior people?
  - how?

Ongoing DPP actions - Solutions?

- Community Training (leadership and community) SMEs
  - Psychological safety training (**)
  - Ally Training
  - "Undoing Racism" workshops
  - Facilitator training
  - Award and talk committee training (including implicit bias tests and broadened metrics)
- Community town-hall meetings
- Workshops
  - Evidence based hiring and admissions (bias training, non-cognitive metrics, gatekeepers etc)
- Site metrics for meetings - impact
- Human Relations code - Bias incident policy
  - Utilizing Restorative (transformative) Justice
- Agency outreach and interventions

https://commercetools.com/img/containers/assets/blog/business-blog/businessblog_2022_beyond-diversity-and-inclusion-psychological-safety-in-the-workplace_1.png/949968e06279dba63e508e7ebbcca5bb.png

https://www.uh.edu/socialwork/news/events/register-for-undoing-racism-workshops/undoingracism_web.jpg

https://gendercenter.utdallas.edu/files/SAFE-ZONE-Logo.jpg

Ongoing actions - site selection?

GARDN-M Initial Score

This score is just the 1st step in the down-selection

- City 1
- City 2
- City 3
- City 4 ✖
- City 5 ✖

Mitigation Strategies

This is our chance to invest in these communities!

- City 1
- City 2
- City 3

There is no universal mitigation plan. Instead, mitigation for each locale must be designed and include the local communities.

Some "mitigations" should be standard practice: like accessibility and safety protocols

Final Selection

Evaluate whether or not mitigations will work

- City 1
- City 2

Not every mitigation plan will be viable.

Current events can change the local climate such that mitigation plans can become non-viable, or issues can arise that no mitigation could address.

Meeting

Engage with and enjoy our community!

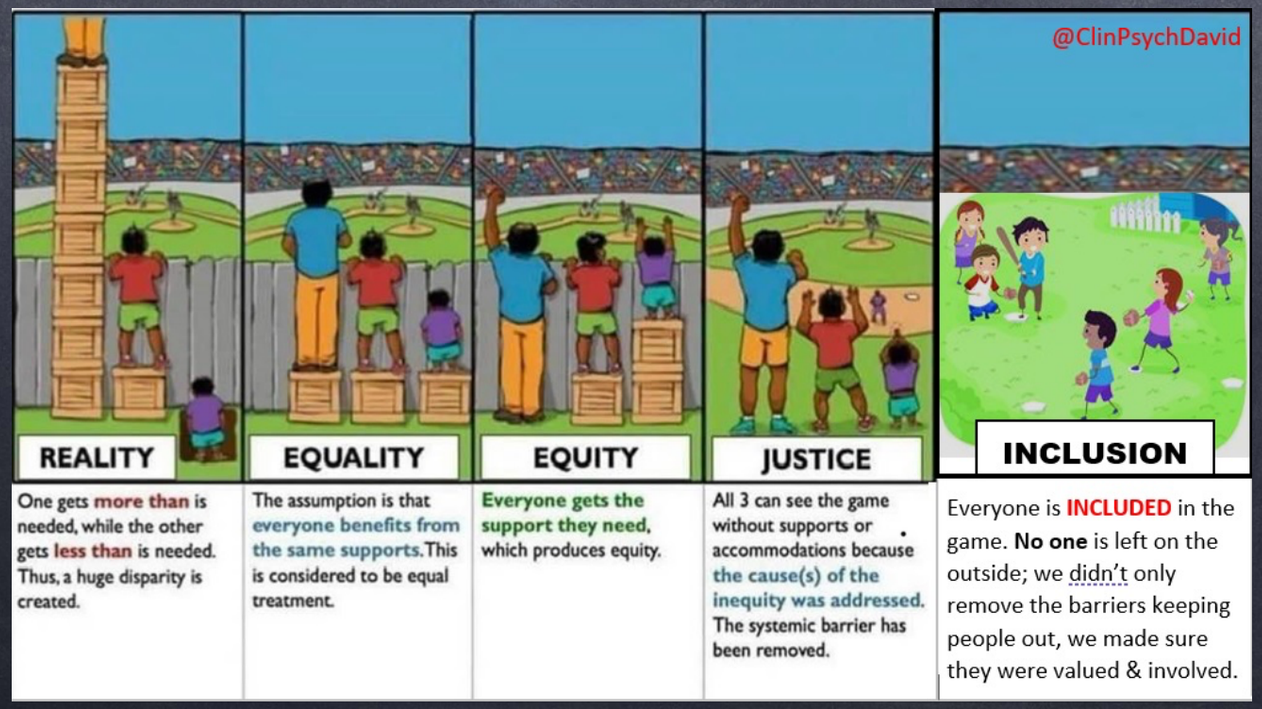
At every step we need to be paying attention to current events in case they change the environment and our ability to engage in mitigations

Culture is hard to change and will not change overnight

- Education
- Research
- Persistance

} Discussion

We can do this and are doing this



Some suggested ground rules (Community Agreement)

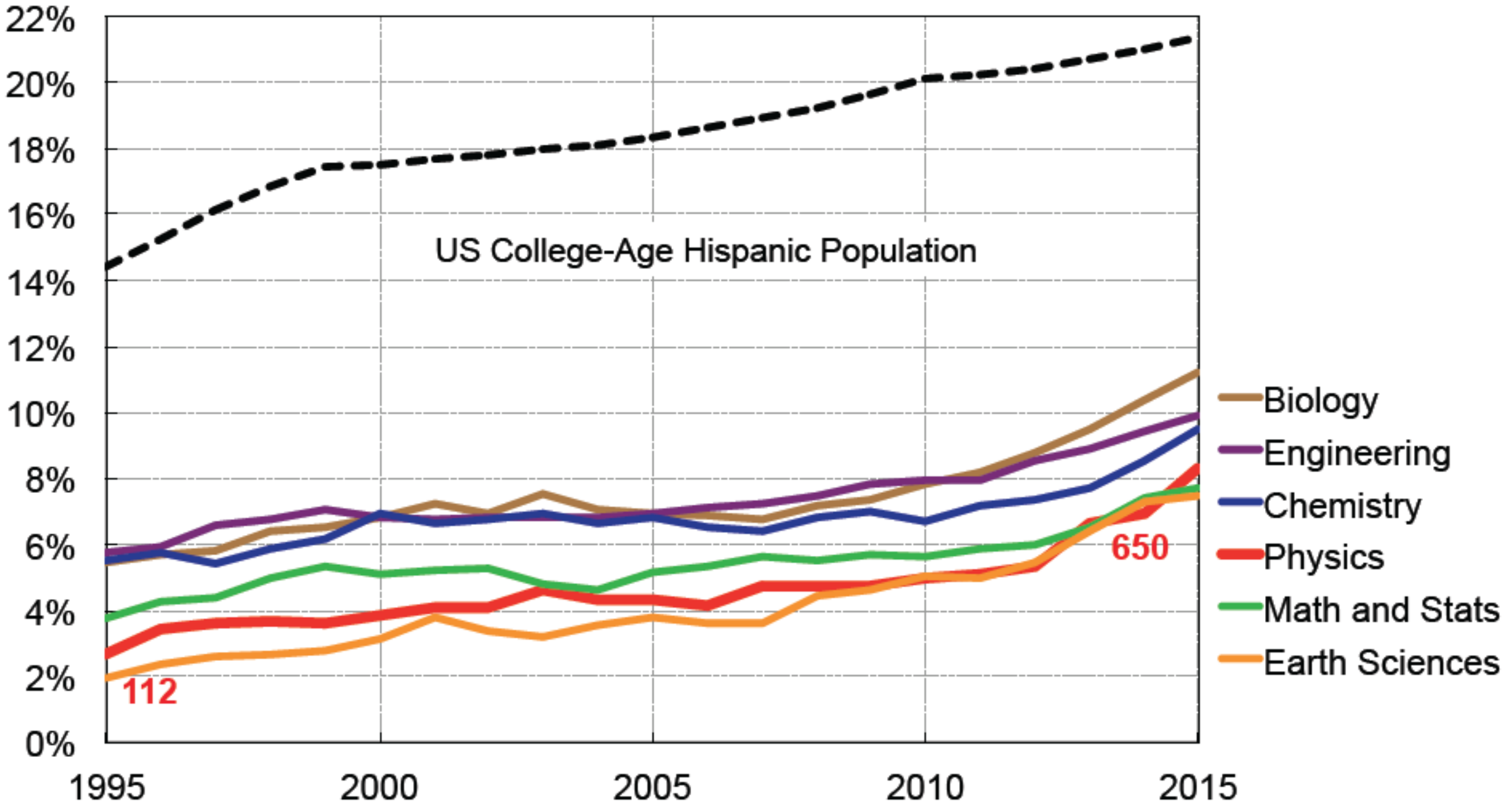
- Be inclusive; make space for all voices
- Focus on solutions, not just challenges
- Speak to be understood; listen to understand
- Listen respectfully, without interrupting.
- Listen actively and with an ear to understanding others' views. (Don't just think about what you are going to say while someone else is talking.)
- Take care of yourself and others
- Criticize ideas, not individuals.
- Commit to learning, not debating. Comment in order to share information, not to persuade.
- Avoid blame, speculation, and inflammatory language.
- Allow everyone the chance to speak.
- Avoid assumptions about any member of the class or generalizations about social groups. Do not ask individuals to speak for their (perceived) social group.

APS meeting rules (code of conduct)

- It is the policy of the American Physical Society (APS) that all participants, including attendees, vendors, APS staff, volunteers, and all other stakeholders at APS meetings will conduct themselves in a professional manner that is welcoming to all participants and free from any form of discrimination, harassment, or retaliation. Participants will treat each other with respect and consideration to create a collegial, inclusive, and professional environment at APS Meetings. Creating a supportive environment to enable scientific discourse at APS meetings is the responsibility of all participants.
- Participants will avoid any inappropriate actions or statements based on individual characteristics such as age, race, ethnicity, sexual orientation, gender identity, gender expression, marital status, nationality, political affiliation, ability status, educational background, or any other characteristic protected by law. Disruptive or harassing behavior of any kind will not be tolerated. Harassment includes but is not limited to inappropriate or intimidating behavior and language, unwelcome jokes or comments, unwanted touching or attention, offensive images, photography without permission, and stalking.
- Violations of this code of conduct policy should be reported to meeting organizers, APS staff, or the APS Director of Meetings. Sanctions may range from verbal warning, to ejection from the meeting without refund, to notifying appropriate authorities. Retaliation for complaints of inappropriate conduct will not be tolerated. If a participant observes inappropriate comments or actions and personal intervention seems appropriate and safe, they should be considerate of all parties before intervening.

APS BRIDGE PROGRAM
physics
Enhancing Diversity in Graduate Education

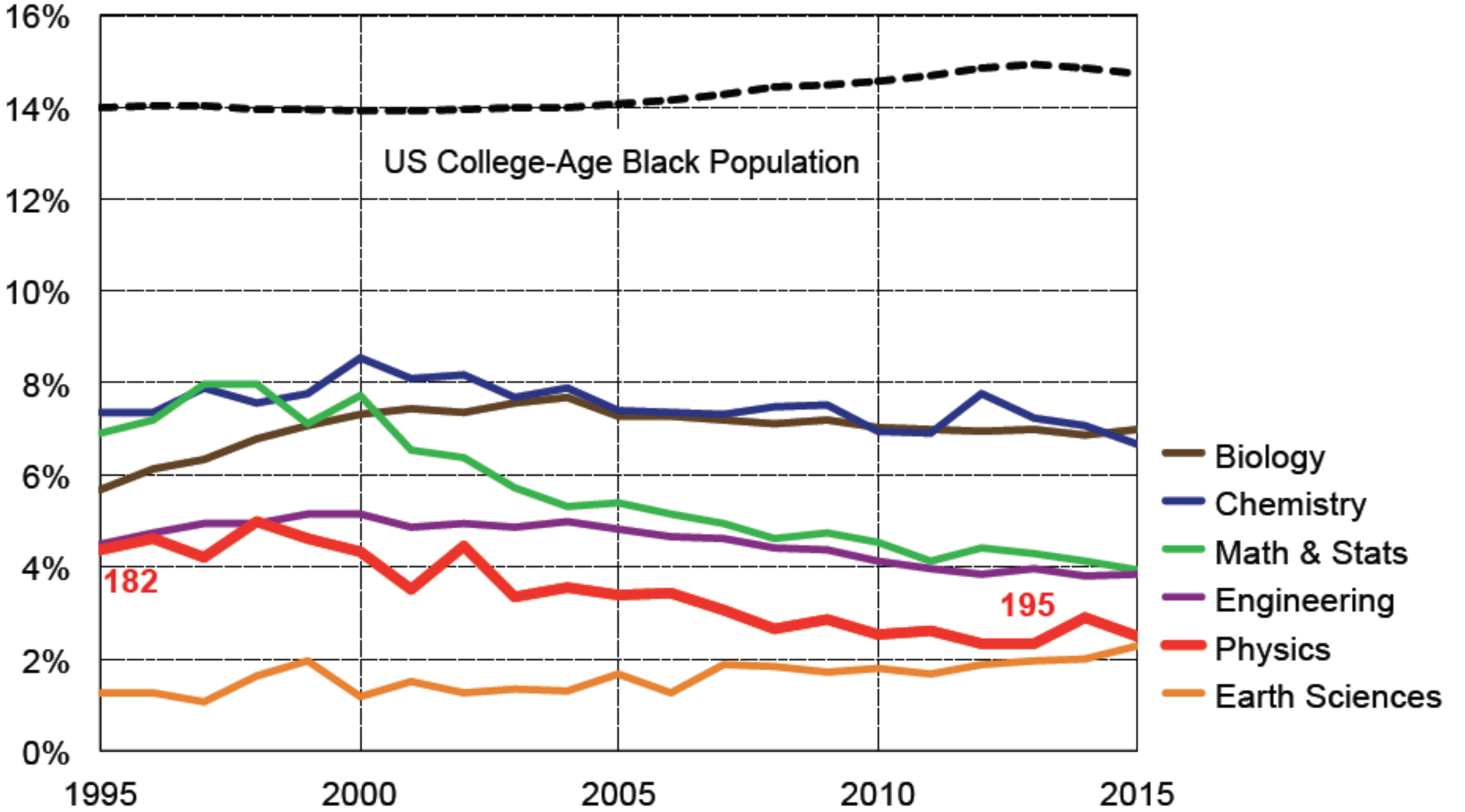
Hispanic American Bachelor Degrees



Source: National Center for Education Statistics, US Census, and APS

APS BRIDGE PROGRAM
physics
Enhancing Diversity in Graduate Education

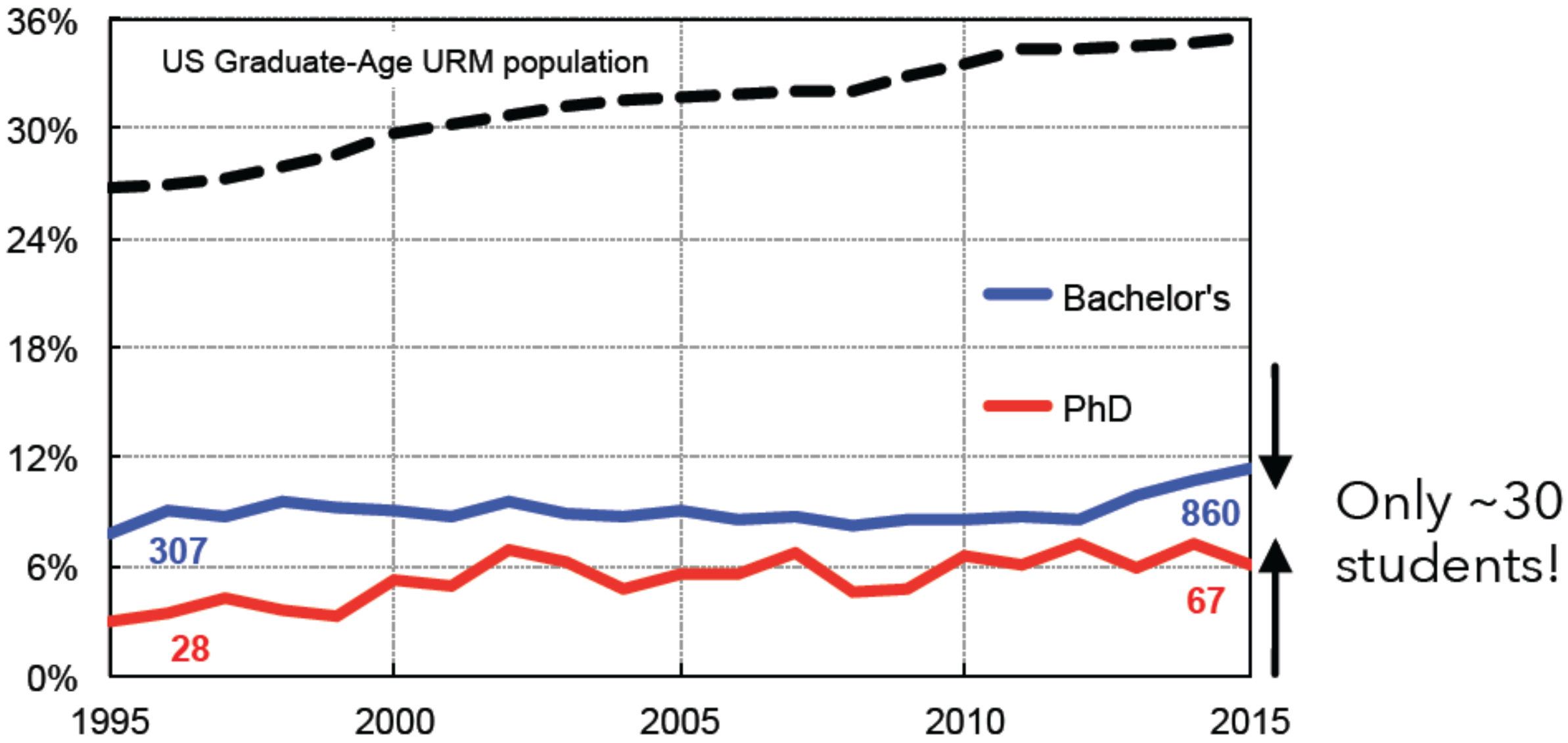
African American Bachelor Degrees



Source: National Center for Education Statistics, US Census, and APS

APS BRIDGE PROGRAM
physics
Enhancing Diversity in Graduate Education

Underrepresented Minority (URM) Physics degrees



Source: National Center for Education Statistics, US Census, and APS

AGU demographics

Section Name	Student	Early Career	Mid-Career	Experienced	Retired
Aeronomy					
Female	29.38%	27.97%	16.88%	9.32%	2.70%
Male	70.00%	71.06%	82.08%	90.14%	97.30%
Prefer Not to Answer	0.63%	0.96%	1.04%	0.55%	0.00%
Cryosphere Sciences					
Female	44.57%	33.27%	28.09%	16.84%	6.76%
Male	53.55%	65.72%	71.51%	82.81%	93.24%
Magnetospheric Physics					
Female	32.40%	26.42%	17.47%	9.21%	3.59%
Male	66.76%	72.56%	81.51%	89.83%	96.41%
Prefer Not to Answer	0.84%	1.03%	1.03%	0.96%	0.00%
Marine Geochemistry					
Space Physics and Aeronomy					
Female	35.57%	29.86%	21.05%	10.73%	5.48%
Male	64.18%	68.48%	78.25%	88.29%	94.52%
Prefer Not to Answer	0.25%	1.66%	0.69%	0.98%	0.00%
Biological Oceanography					
Female	55.00%	47.00%	34.98%	20.72%	9.09%
Male	44.12%	51.45%	64.10%	78.45%	90.91%
Prefer Not to Answer	0.88%	1.55%	0.92%	0.83%	0.00%

APS DPP ~ 90 - 10 and 85 - 15 for students

Suggestions

- Community Education
  - educate about the issues (reason for need, implicit bias, bias in letters etc)
  - educate about best practices to avoid those issues (letter checkers, guideline sheets etc)
- Committee to find appropriate candidates, solicit nominations and help check the nomination packages (AGU)
- Regular Diversity town hall meetings (following previous guidelines)

Resources

- Starting a web site with links to resources

http://ffden-2.phys.uaf.edu/diversity_resources.html

- Send more resources and suggestions