



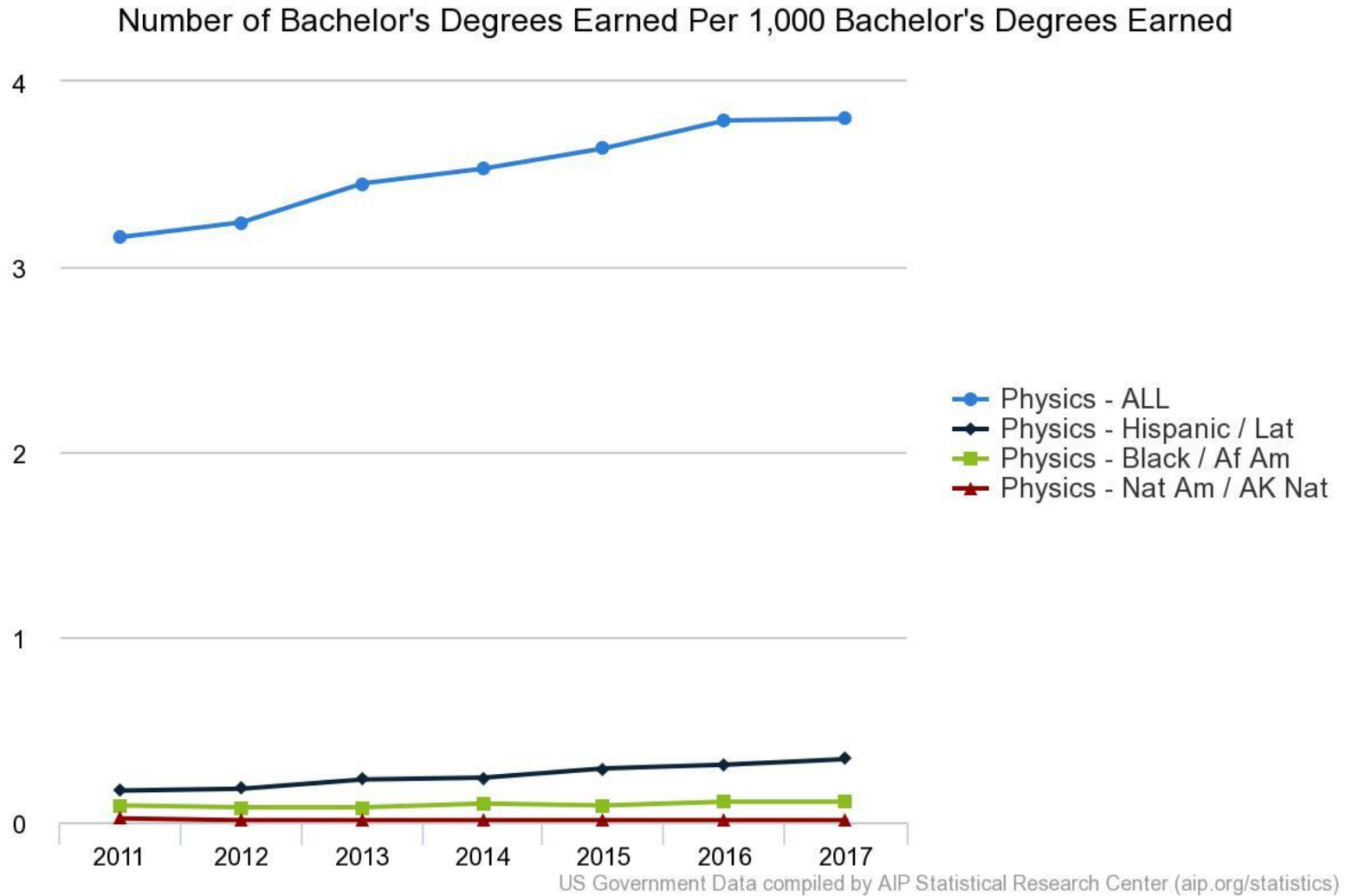
# The Data Fallacy

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# Actually, the Data Excuse

- Brief history of data
- The responses to data by departments—First order change
- Why the use of data is misguided
- The effects of bad data-guided policies on minoritized communities.
- A different approach—Second order change

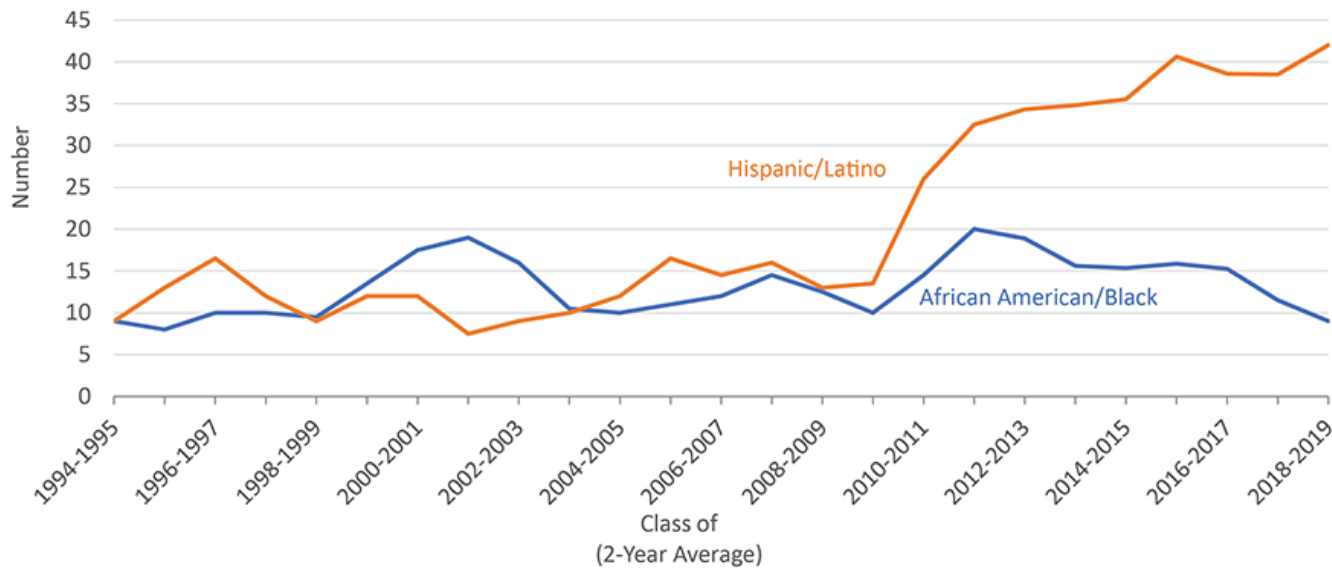
# Actually, the Data Excuse



# Actually, the Data Excuse

~ 3%

Number of African American and Hispanic People Earning a Physics Doctorate,  
Classes of 1994 through 2019



# Actually, the Data Excuse

- Recap of data shows us that participation of historically minoritized populations
  - In the past—Sucked
  - In the present—Sucks
  - In the near future—Will Suck

# Response—First Order Change

- Departments respond to state of affairs using *first order change* strategies
  - First-order change, the *means* of producing results that change. What you *seek*, what you *avoid*, and your *values remain the same*
  - Departments will use *data* to identify ways to address the means
    - Identify choke points like intro classes and design interventions to address issues data has identified
    - Form DEI committees to address issues. Often these are isolated from department, have no resources to use, and have limited participation from the faculty as a whole
    - Other strategies, bridge programs, summer REUs, cluster hires, diversity statements,....
  - The data that is used is all *quantitative*. Supposedly easy to interpret and easy to assess success. Departments can claim *success* or to have *solved* the problem

# Response—First Order Change

- What's wrong with this approach?
  - Quantitative data captures *symptoms* not the *problem*
  - Because there is not the foundational understanding nor the desire to obtain this foundational knowledge, the quantitative data is interpreted in purposely misleading ways and arguments erupt over methodology, variances, statistical significance, etc.
  - Quantitative data allows departments to *“excise”* the issue from the whole and this isolation insulates it from having to do the difficult work
  - Quantitative data allows departments to *limit resources* to address inequities in very narrow ways
  - Qualitative data is not accepted mostly because it is not understood by physicists, but this data gets more at the why's of things

# First Order Change—Why it's used

- Departments are using the data in a misinterpreted way to institute first-order change because
  - Gives the illusion of success.
  - Real change won't fit with its self-image
  - Fear loss of prestige—the myth of the physics meritocracy
  - Truths are often inconvenient and uncomfortable and fear recrimination
  - Lack of leadership and vision



# Consequences of the Data Fallacy

- Consider what happens after a department has instituted a first order change
  - Inevitably, because there has been no change of values, a minoritized person will suffer some sort of trauma
    - i. Results in the person doubting themselves, *racelighting* (Wood & Harris 2021, Racelighting: A Prevalent Version of Gaslighting Facing People of Color)
    - ii. *Racelighting* refers to the process whereby People of Color question their own thought and actions due to systematically delivered racialized messages that make the second guess their own lived experiences with racism. When *racelighted*, People of Color may begin to question their interpretation of reality and begin to wonder if they are being overly sensitive.

# Consequences of the Data Fallacy

- Consider what happens after a department has instituted a first order change
  - Institutional betrayal results
    - i. Supporting covers ups and misinformation
    - ii. Failure to prevent abuse
    - iii. Difficult reporting procedures and inadequate responsive
    - iv. Normalize abusive contexts
    - v. Punishing victims and whistle blowers

# Consequences of the Data Fallacy

- All of these commonly occurring (to minoritized communities) experiences happen despite the department thinking it has made fundamental changes by relying on the data to design their interventions
  - To the affected communities, it looks like institutional betrayal....because it is
  - Departments throw up their hands, "what else do you all want", and many just quit on the effort
  - The resulting environment for minoritized communities' results in many leaving.

# A Different Path—Second Order Change

- *Second order* change involves both changing values and structures.
  - It is more *revolutionary*, and
  - it can be quite *scary, uncomfortable*, and
  - *challenges* to established power structure.
- Second order change is characterized by
  - *Multilevel change*, i.e., change throughout the hierarchy
  - Change is *irreversible*
  - Change results in a *new world view*, a new paradigm
- It is much, much, more difficult to achieve.

# Second Order Change—A recipe

- Sense making
  - Abandoning data for stories
  - Using shared leadership to organize the process
  - Centering the voices of minoritized communities
  - The process is very messy but results in a vision that is interpreted by all in a similar way, that has been constructed with the involvement of all stakeholders, and that has buy in from a critical mass distributed throughout the existing hierarchy.
  - Exam personal beliefs, biases, and stereotypes that shape the interactions.

# Second Order Change—A recipe

- Acknowledge that despite valuing objectivity, science is not value—neutral.
  - What gets *funded* is not neutral, but decided by the community
  - What is valued as *good science* is not neutral, but decided by the community
  - Who does science is not neutral, but often restricted to well-resourced communities
  - For more see for examples Mandel & Tetlock, *Front. Psychology*, 2016; 7:451 or Hoehner, *Virtual Mentor*. 2006;8(5):341-344. doi: 10.1001/virtualmentor.2006.8.5.oped2-0605.
  - The belief of science neutrality leads to *myth* of science as a *meritocracy*...students fail because they are simply not *good* enough to do science.

# Second Order Change—A recipe

- Understand that there is a history and that minoritized communities still live out the trauma of that history.
  - In 1951\* in Youngstown the little league team that won the city championship had one black player
  - To celebrate the championship, the coaches took the team to a city swimming pool to celebrate
  - The black player was not allowed in the pool and had to sit outside the fence and watch
  - Coaches pleaded with the lifeguards to let the boy in. He was let in. All the white folk got out of the pool, and the black boy was put on a raft and was pushed around the pool. The lifeguard repeatedly told him not to touch the water or the pool would have to be emptied and purified.
  - Events like this are seared into our *memory*, we cannot forget

\*From Caste, The Origins of Our Discontents by Isabel Wilkerson

# Second Order Change—Recap

- Sense making
- Science is not value—neutral
- Honor the histories of minorized communities



# Final Thoughts

- External actions without proper internal reflection likely will not be sustainable. External actions are often driven by the false promise of data and lead to only first order changes
- Expect discomfort, expect resistance, expect frustration, and expect a great deal of satisfaction when things do work
- This stuff is hard, be patient but mostly, be kind
- Willie's Parable.
  
- Thank you