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## The Challenge of Maintaining our Physician-Scientist Workforce (Rare Breed/Endangered Species): Epidemiology & Anecdotes

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# The Challenge of Maintaining our Physician-Scientist Workforce (Rare Breed/Endangered Species)

## *Epidemiology & Anecdotes*

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# Disclosure

- **I have no actual or potential conflict of interest in relation to this program/presentation.**

# Outline

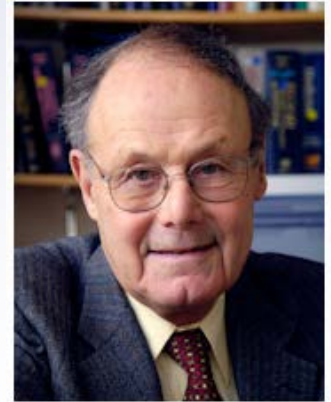
- Who makes up the P-S workforce?
- What are their demographics?
  - Age
  - Gender
  - Race/Ethnicity
  - Specialty
- What Challenges do P-S face?

# History



1979: James Wyngaarden, NIH Director - rang warning bells that PS with medical degree was 'an endangered species' (*NEJM*)

1996: 'Nathan Committee' to address perceived shortfall of PS. Recommended career development grants and LRPs to offset PS education debt and encourage research careers.



# Physician-Scientist – Who are they?

- Scientists
- With professional degrees
- With training in clinical care
- Engaged in independent research (basic or clinical)
- MD, DO, DDS, DVM ± PhD
- (Not necessarily simultaneous efforts)



- “Bridge”

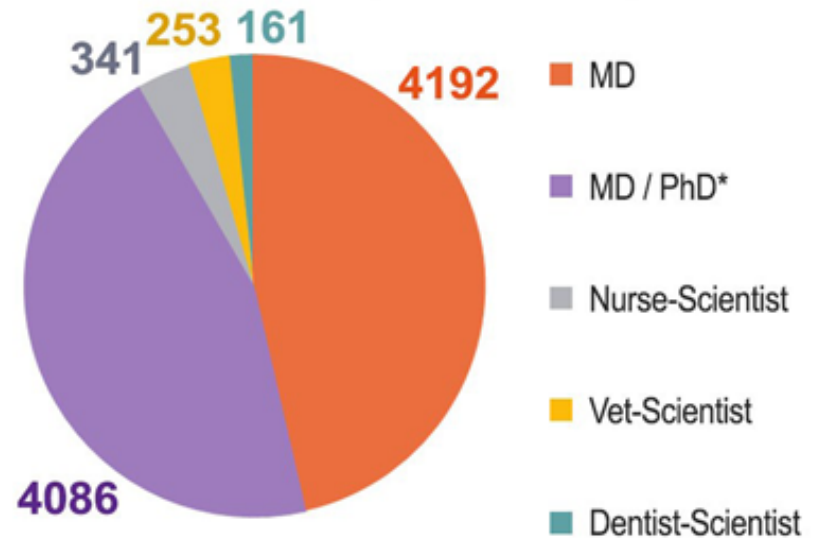


– Bench ↔ Bedside

# Size and Composition

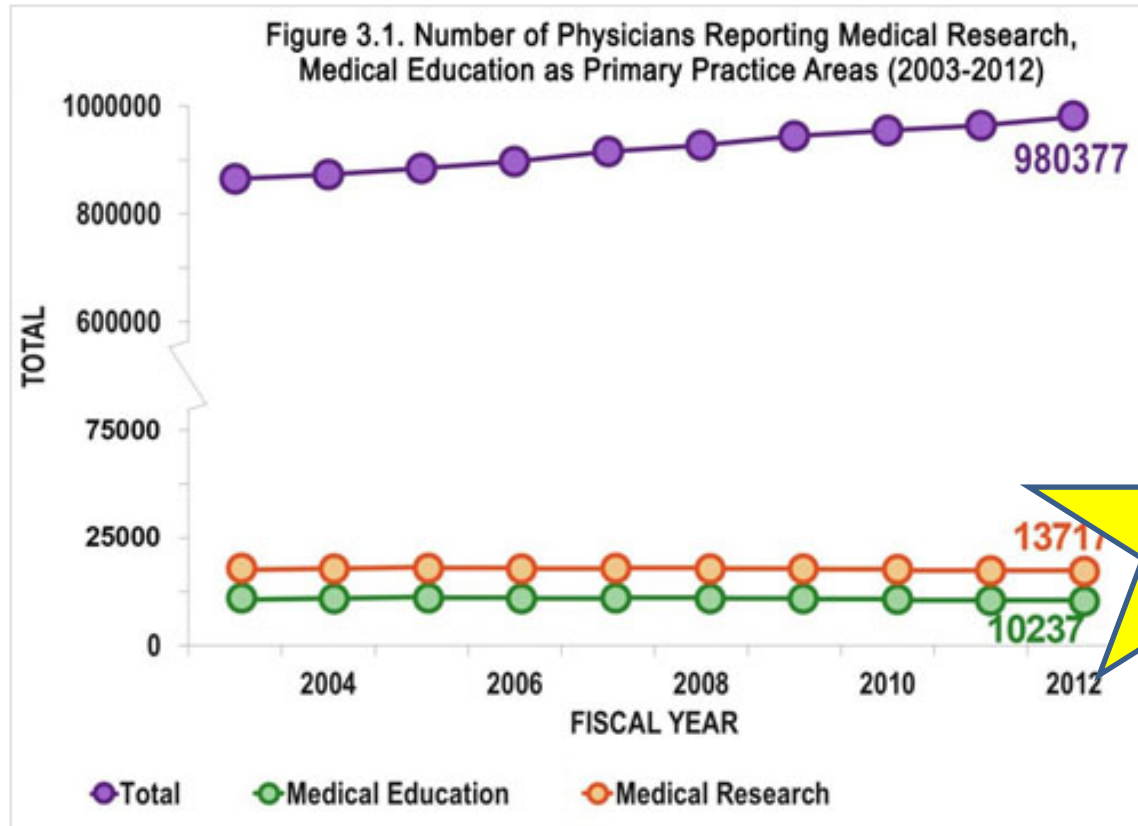
- Numbers hard to capture
- NIH-funded workforce
- ‘Invisible’
  - Industry
  - Non-NIH funded
  - Unfunded
- 2 categories:
  - Clinical research with patients in practice
  - Laboratory-based research

Figure 2.1. NIH-funded Physician-Scientist Workforce (FY2008-2012)



NIH PSW-WG, 2014

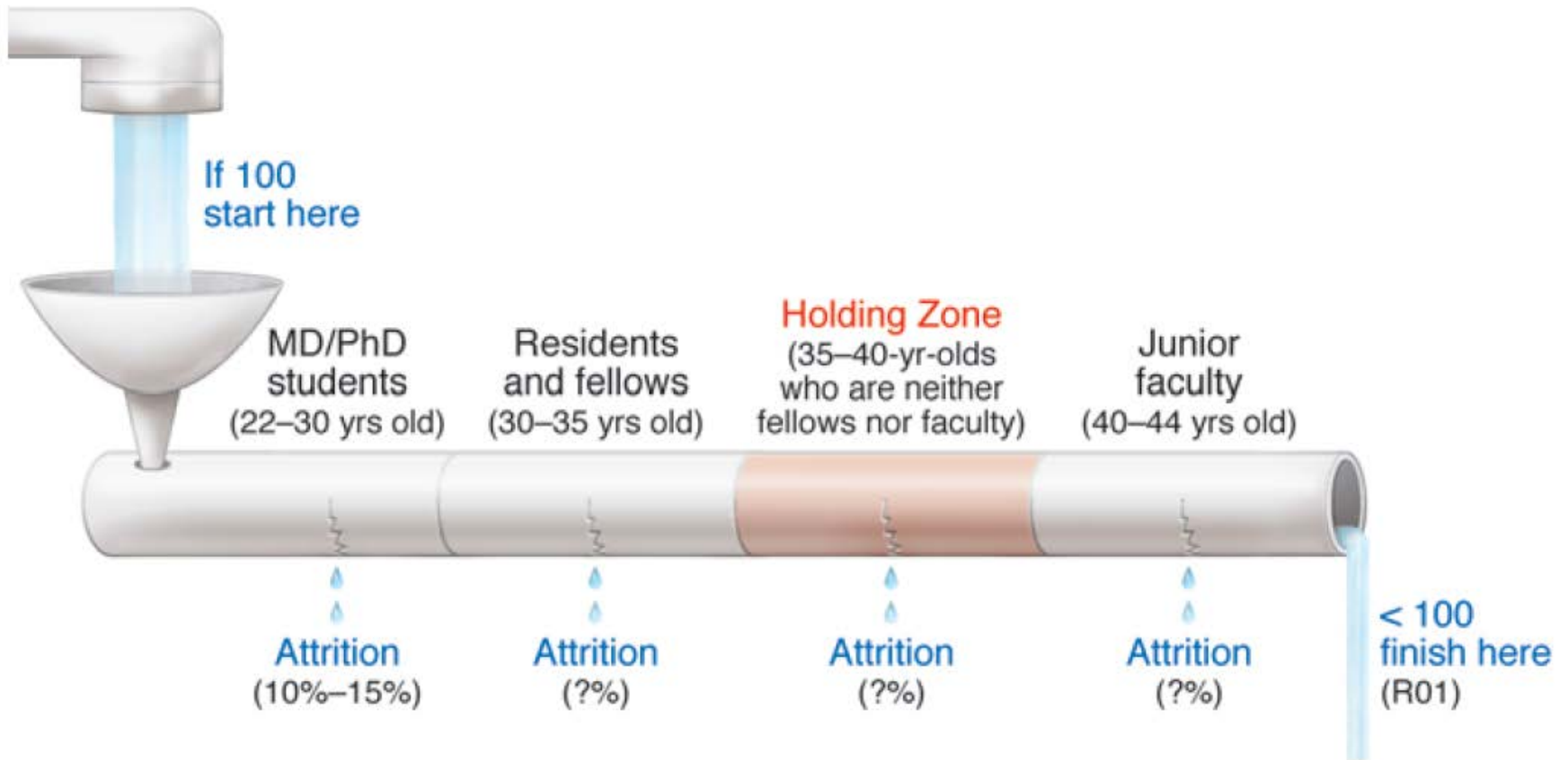
# P-S Pool is Decreasing



SOURCE: Those MD-holding Physicians that indicated they were in primarily Medical Education or Medical Research from the American Medical Association (AMA) Physician Masterfile Annual Year-end Snapshots.

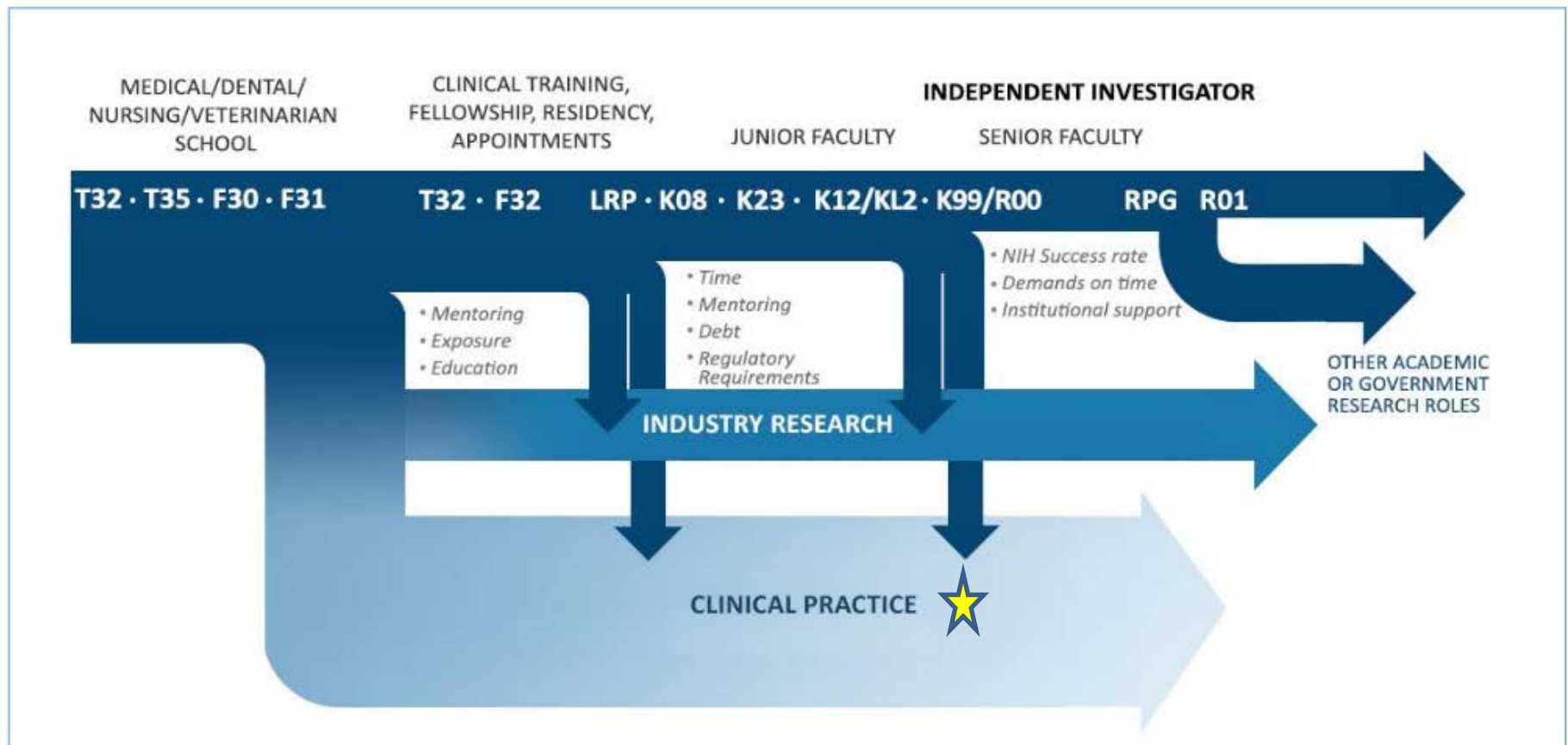


# Pipeline

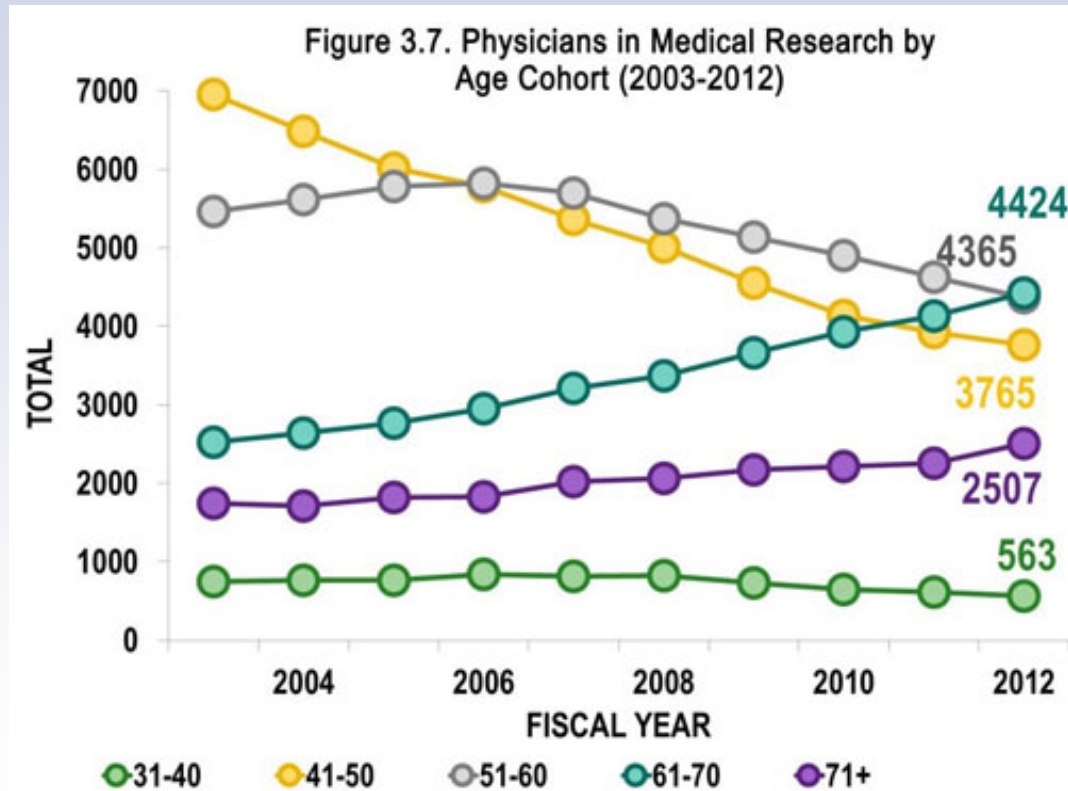


J Clin Invest 2015 Oct 1;125(10):3742-7

# Pipeline: NIH P-S Pathway



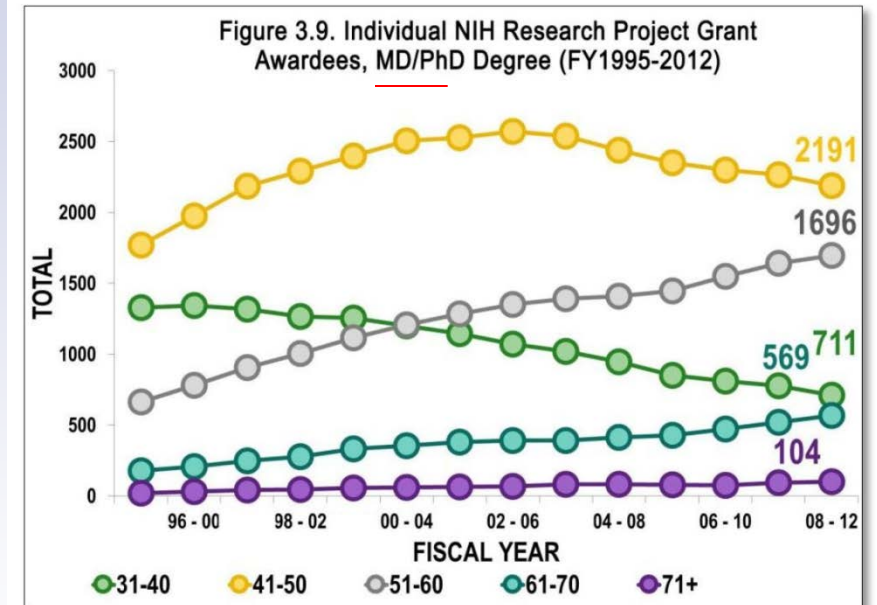
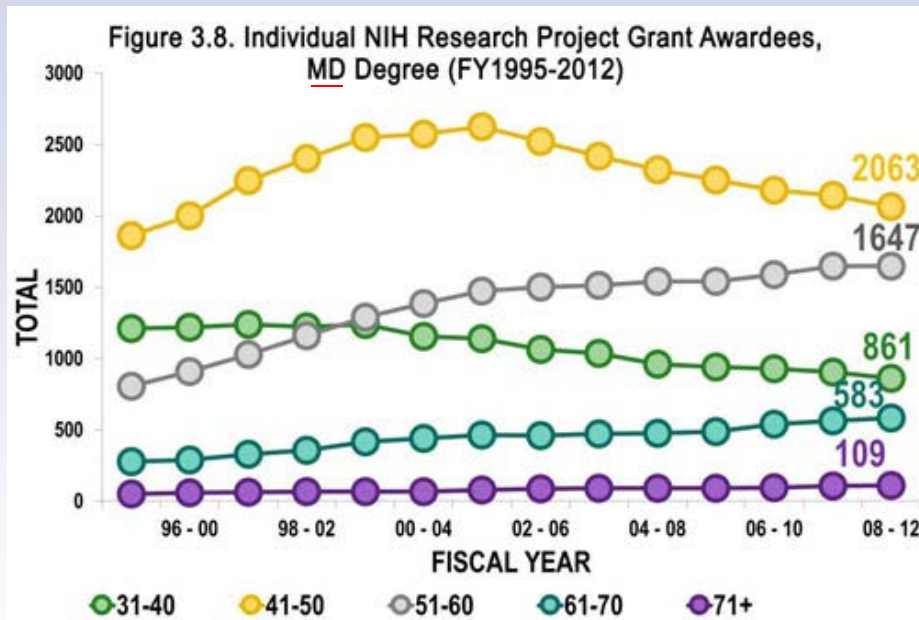
# P-S Pool is Aging



NIH PSW-WG, 2014

- Age profile has increased over past decade.
  - Decline 31-60 years
  - Increase  $\geq 60$  years

# NIH Funded P-S Pool is Aging



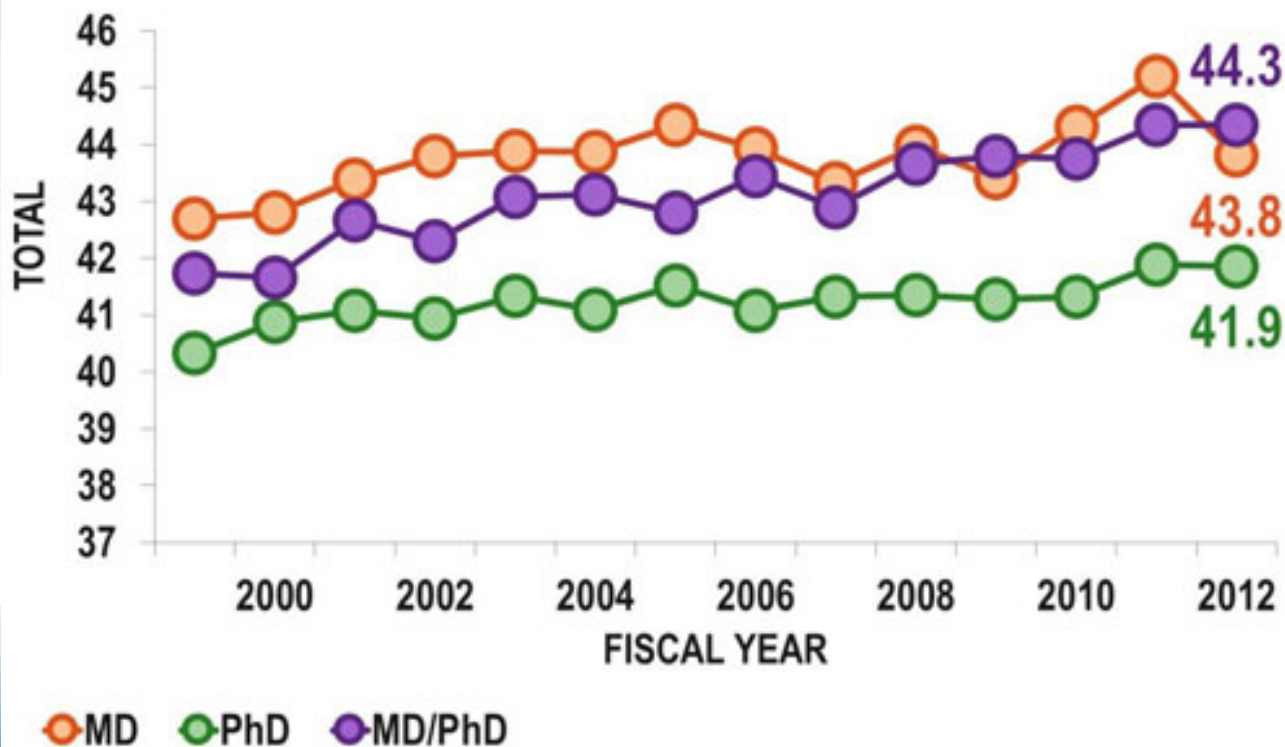
- Average Age of P-S with NIH RPGs (Research Project Grants) has increased

NIH PSW-WG, 2014

- Decline 31-50 years
- Increase  $\geq 50$  years

# Average Age of First Time RPG Awards Increasing

Figure 3.11. Average Age of First-time NIH Research Project Grant Awardees, PhD, MD, and MD/PhD Degree (FY1999-2012)

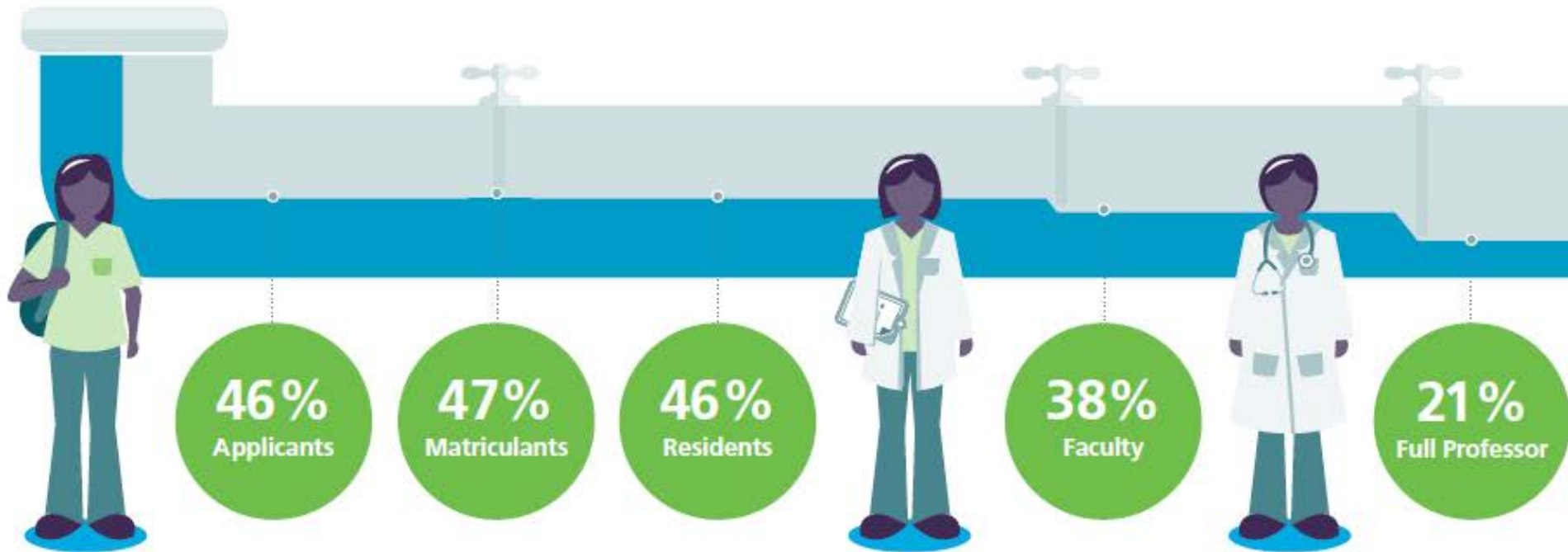




# P-S Pool is Aging

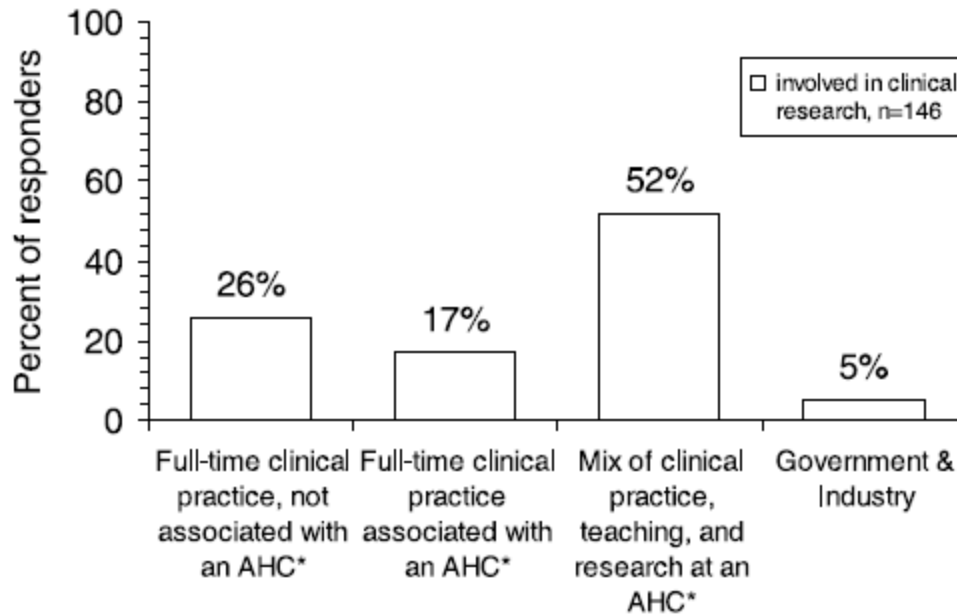
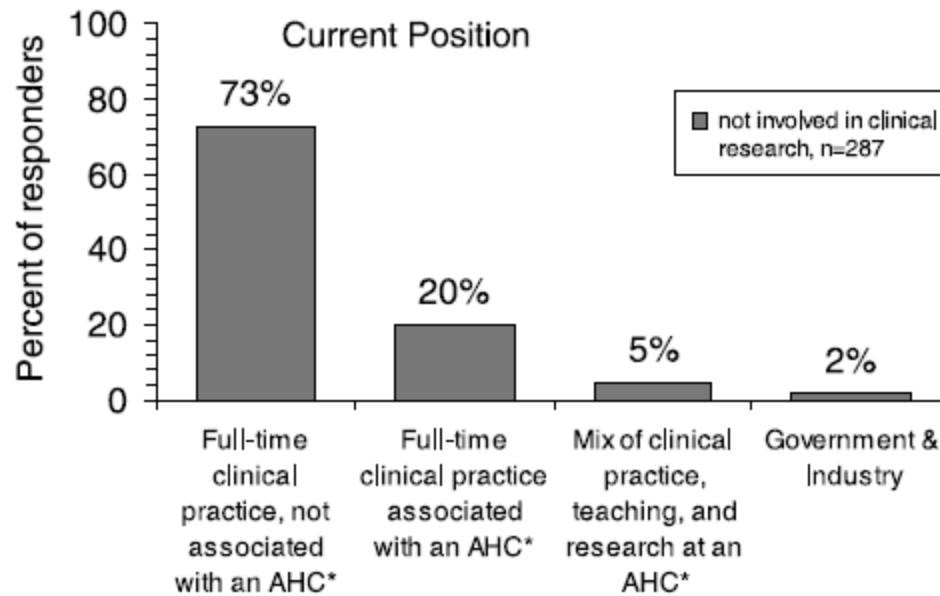
- Longer training times
- Higher grant success rates for established investigators
- Postponement of retirement

# Unequal Participation by Women



- 42% F MD/PhD Grads
- Gender gap with entrance into and promotion in AMC

AAMC, 2013-2014

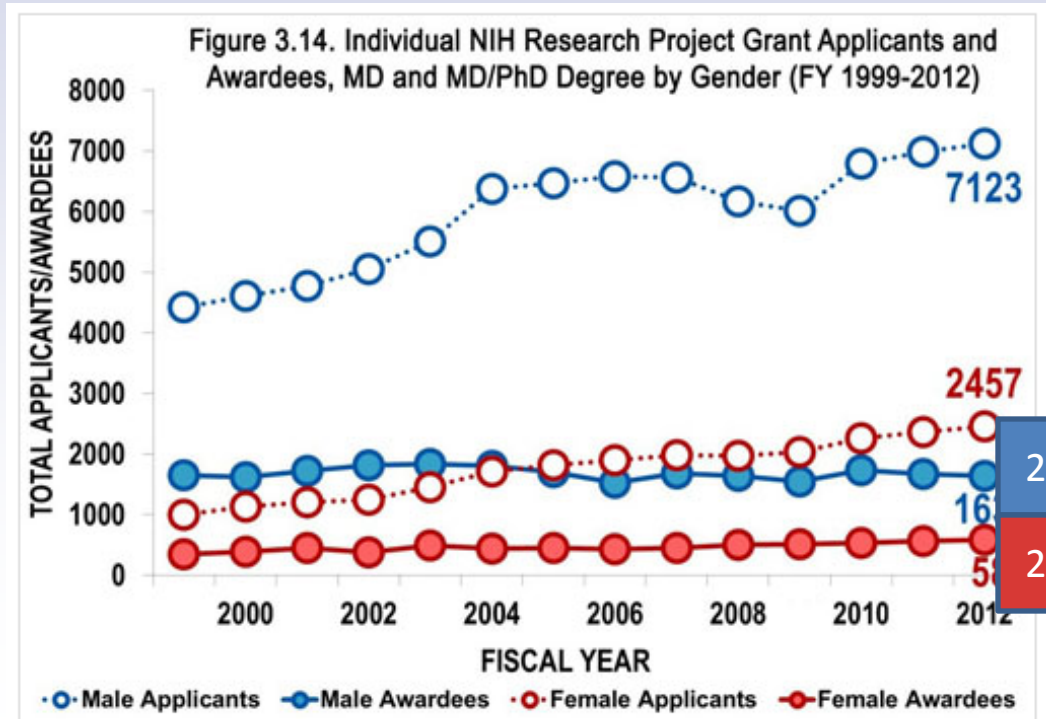


Medical Education 2004; 38: 848–851



# Unequal Participation by Women

- Large difference in number of M and F applicants.
- No difference in NIH RPG award rates by gender.



NIH PSW-WG, 2014

# Unequal Participation by Women



ACADEMIA AND THE PROFESSION

Annals of Internal Medicine

## Gender Differences in Time Spent on Parenting and Domestic Responsibilities by High-Achieving Young Physician-Researchers

Shruti Jolly, MD; Kent A. Griffith, MS; Rochelle DeCastro, MS; Abigail Stewart, PhD; Peter Ubel, MD; and Reshma Jaggi, MD, DPhil

**Background:** Female physician-researchers do not achieve career success at the same rate as men. Differences in nonprofessional responsibilities may partially explain this gap.

**Objective:** To investigate the division of domestic labor by gender in a motivated group of early-career physician-researchers.

**Design:** Nationwide postal survey between 2010 and 2011.

**Setting:** United States.

**Participants:** Physician recipients of National Institutes of Health K08 or K23 awards between 2006 and 2009 with active academic affiliation at the time of the survey.

**Measurements:** Time spent on parenting and domestic tasks was determined through self-report. Among married or partnered respondents with children, a linear regression model of time spent on domestic activities was constructed considering age, gender, race, specialty, MD or MD/PhD status, age of youngest child, number of children, work hours, K award type, and spousal employment.

**Results:** A 74% response rate was achieved, and 1049 respondents were academic physicians. Women were more likely than

men to have spouses or domestic partners who were employed full-time (85.6% [95% CI, 82.7% to 89.2%] vs. 44.9% [CI, 40.8% to 49.8%]). Among married or partnered respondents with children, after adjustment for work hours, spousal employment, and other factors, women spent 8.5 more hours per week on domestic activities. In the subgroup with spouses or domestic partners who were employed full-time, women were more likely to take time off during disruptions of usual child care arrangements than men (42.6% [CI, 36.6% to 49.0%] vs. 12.4% [CI, 5.4% to 19.5%]).

**Limitations:** Analyses relied on self-reported data. The study design did not enable investigation of the relationship between domestic activities and professional success.

**Conclusion:** In this sample of career-oriented professionals, gender differences in domestic activities existed among those with children. Most men's spouses or domestic partners were not employed full-time, which contrasted sharply with the experiences of women.

**Primary Funding Source:** National Institutes of Health.

*Ann Intern Med.* 2014;160:344-353.  
For author affiliations, see end of text.

[www.annals.org](http://www.annals.org)

- Work – Life Balance
- Women still share disproportionate burden for family care responsibilities
  - Child-bearing
  - Start of Lab
- Boundaries

# Unequal Participation by Minorities

Race/ Ethnicity	US Population*	NIH Applicants†	NIH Awardees†
White	64%	70%	74%
Hispanic	16%	5%	4%
African Am	12%	2%	2%
Asian	5%	23%	20%

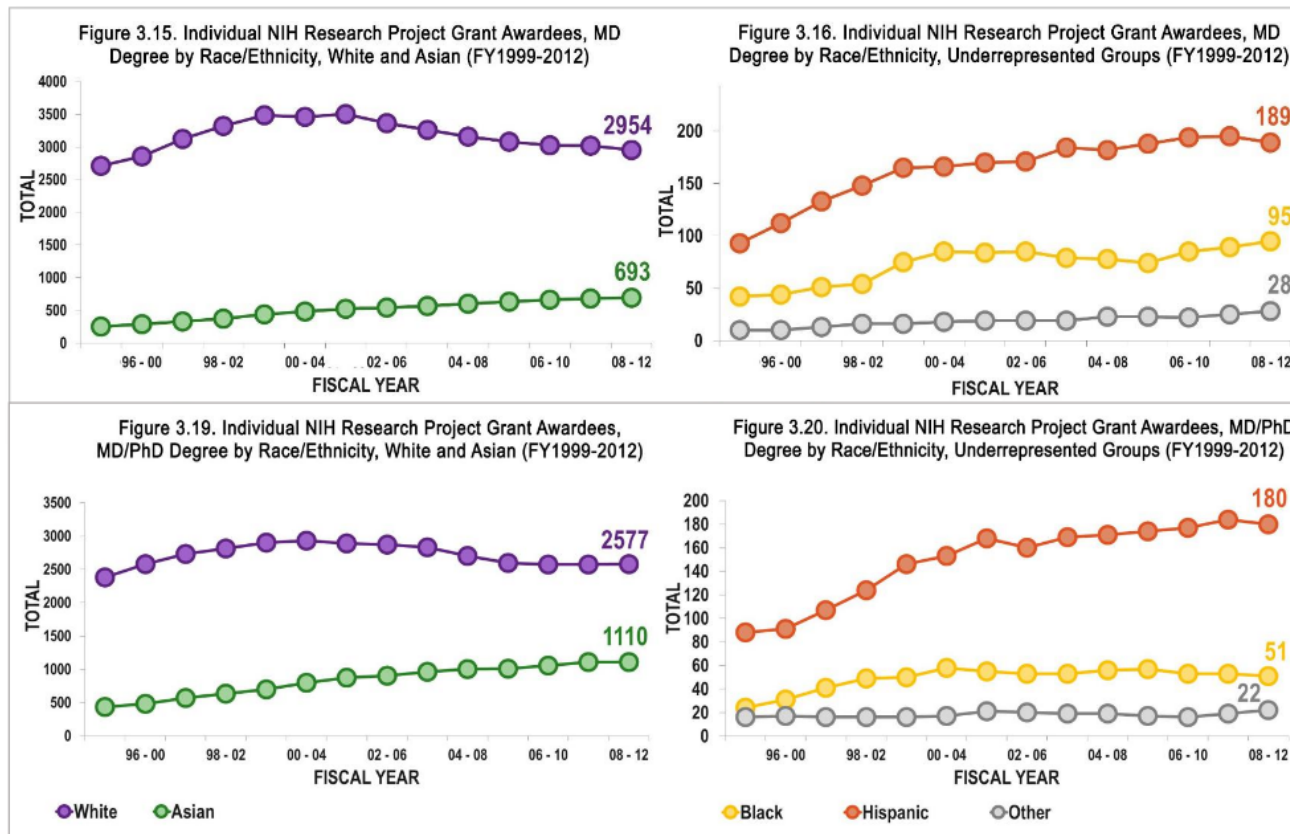
\* Wikipedia (Demography of the United States)

† NIH PSW-WG, 2014

(rounded to nearest whole numbers)

# Unequal Participation by Minorities

- Sig growth of Asian and Hispanic awardees #s
- Less growth of African-American and Native Am #s



NIH PSW-WG, 2014

# Disparities by Specialties

- 5 career groups:
  1. Medical Specialties (Allergy, Cards, Derm, GI, Neuro)
  2. Surgical specialties (Surg, Urol, Ophtho, Otolaryn)
  3. Other (Phys Med & Rehab, Psych, Other)
  4. Primary care (FP, IM, OBG, Peds)
  5. Hospital-based (Anesth, ED, Path, Rad)

Medical Education 2004; 38: 848–851  
Penn State

# Challenges

- Financial

- Individual:

- Increasing education cost & training length - ↑ Debt
      - MD vs MD/PhD
    - ↓ Income Potential



- Institutional:

- Certainty of Clinical Revenue – Salary support
    - Uncertainty of Research Funding – Expensive hobby

- Funding Environment



# Challenges

- Time
  - Increased training length
  - All things to all people? – mission tensions
  - Pressures related to finances
  - Work-life balance
  - ‘Tyranny of the Urgent’
- Timing
  - Start clinical care, lab, & family and lab
  - Age out of young investigator perks



# Challenges

- Confidence
- Contribution
- Competitiveness
  - RVUs
  - Grants
  - Reviewer perceptions
- Competence
- Coaching (mentors; protectors)





# Rewards

- The Bridge
- Personal satisfaction
  - Greater good, more than the individual
  - Intellectual stimulation
  - Thrill of discovery
- Perseverance, tenacity, grit
- Future leadership relevance

# Summary

- PS are a rare breed/endangered species.
- PS workforce is aging.
- Women and minorities are under-represented.
- The challenges are numerous.
- The rewards are great.
- We need to redefine the PS and address supports.

# DEAN - Summary

- Value of Physician-scientists remains central to mission of academic medicine
- Challenges have stabilized but require ongoing affirmative efforts
- Specific purposeful mechanisms must be developed to ensure ongoing viability of physician-scientist role