National Institutes of Health
Office of Extramural Research

PHYSICIAN-SCIENTIST WORKFORCE WORKING GROUP REPORT

ACD Meeting, June 2014

Biomedical Workforce (BMW) Working Group June 2012 Report Recommendation

BMW WG recommended that NIH conduct a follow-on study that focuses on physician-scientists:

- Different economic and educational drivers affect the training and career paths of the physician-scientist workforce than the PhD workforce

- Changing landscape of health care and its effects on academic medical centers will affect future physician-scientist workforce

Charge to the Physician-Scientist Workforce (PSW) Working Group

- Develop approaches that can inform decisions about the development of the U.S. PSW
- Analyze the size and composition of the PSW; consider impact of NIH funding policies
- Assess needs and career opportunities for PS trainees
- Identify incentives and barriers to entering the PSW

Who are Physician-Scientists?

- Scientists with professional degrees who have training in clinical care and who are engaged in independent biomedical research

- Individuals with MD, DO, DDS/DMD, DVM/VMD degrees and nurses with research doctoral degrees who devote the majority of their time to biomedical research

PSW Working Group Roster

David Ginsburg, MD	Elaine Larson, RN, PhD
Sherry Mills, MD, MPH	Vivian S. Lee, MD, PhD, MBA
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Lawrence F. Brass, MD, PhD	Juanita L. Merchant, MD, PhD
Rena N. D'Souza, DDS, PhD	David G. Nichols, MD, MBA
James G. Fox, DVM	Leon E. Rosenberg, MD
Helen H. Hobbs, MD	Andrew I. Schafer, MD
Ann R. Knebel, RN, PhD	Susan VandeWoude, DVM

Subcommittees

- Clinical/Translational PS (incl. Nursing PS)
- Lab-based PS
- Non-MD PS
  - Dentist PS
  - Veterinarian PS
- Data

Quantitative Research

- Analyzed individual-level data of physician-scientists vs applications data
  - Focused on ‘Applicants’ and ‘Award Rates’ (as opposed to ‘Applications’ and ‘Success Rates’)
- Large amount of aggregated individual-level workforce data is available with this report

Qualitative Research

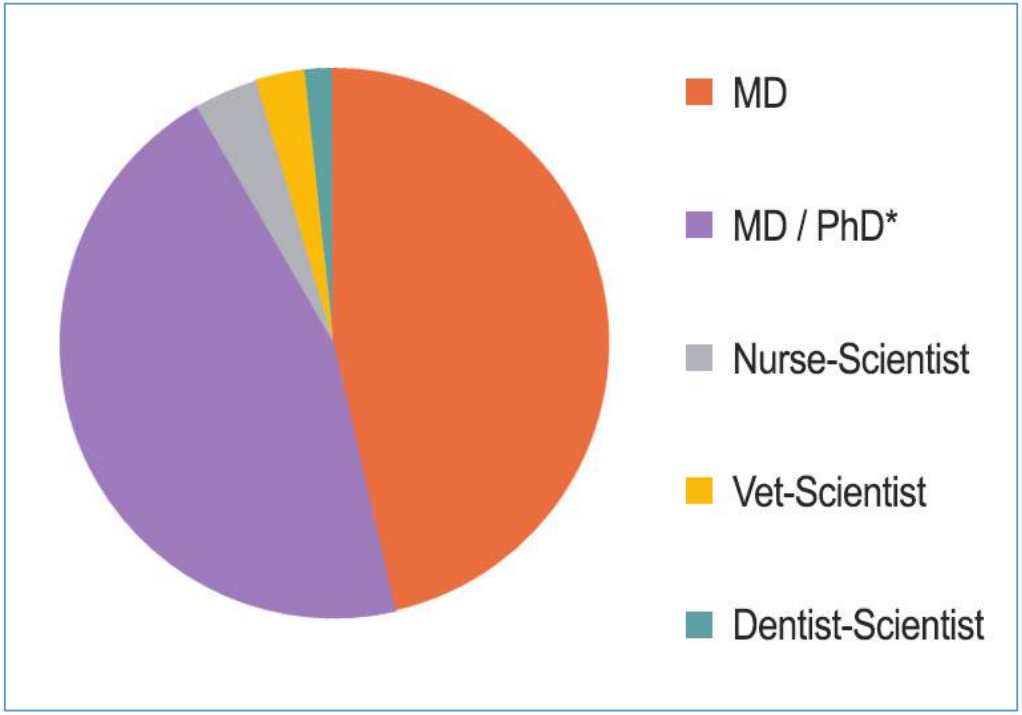
- Focus groups and interviews
  - Medical, dental, and veterinary students
  - Young faculty
  - Deans of medical, dental & veterinary schools
- Questions on factors that influenced decision to pursue a research career

Physician-Scientist Workforce

Physician-Scientist Workforce

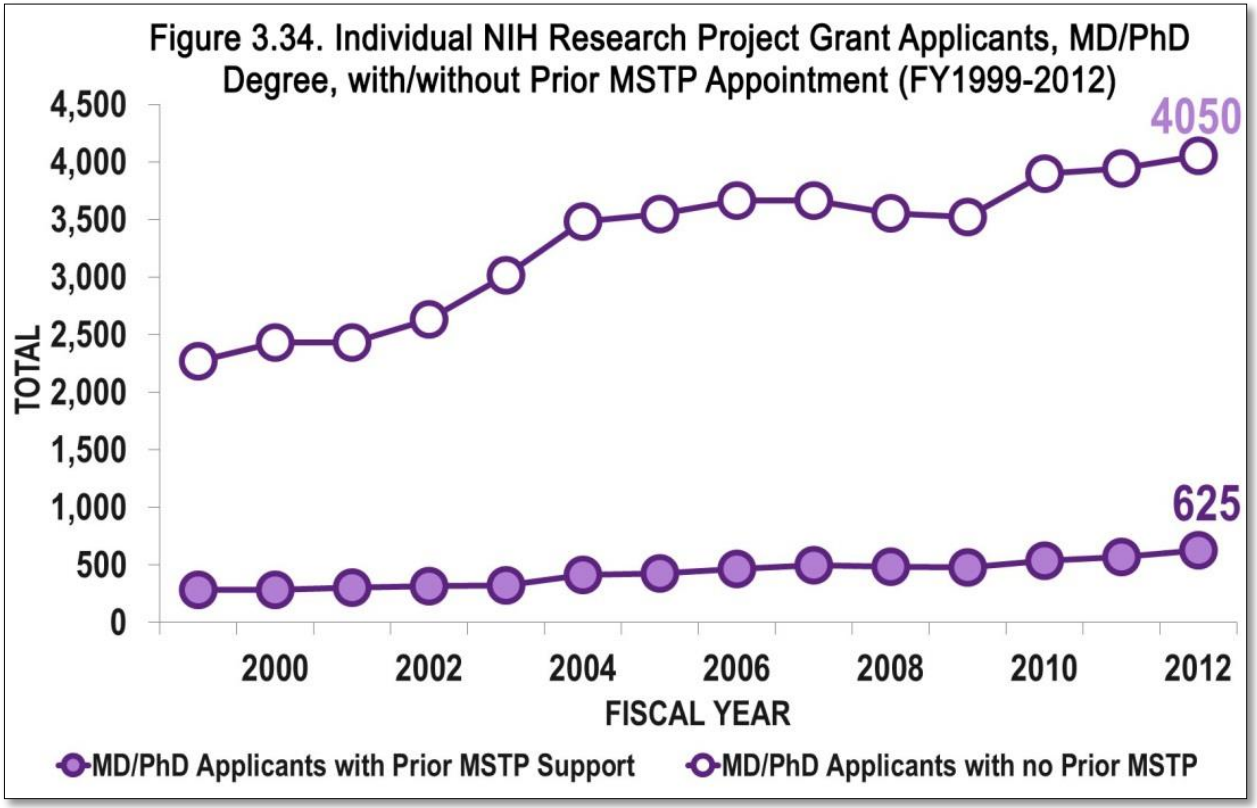
- NIH-Funded PS
- Academic PS funded by other sources
- Professional School Educators
- The invisible PSW
  - Pharma
  - Biotech

NIH-funded Physician-Scientist Workforce (FY2008-2012)



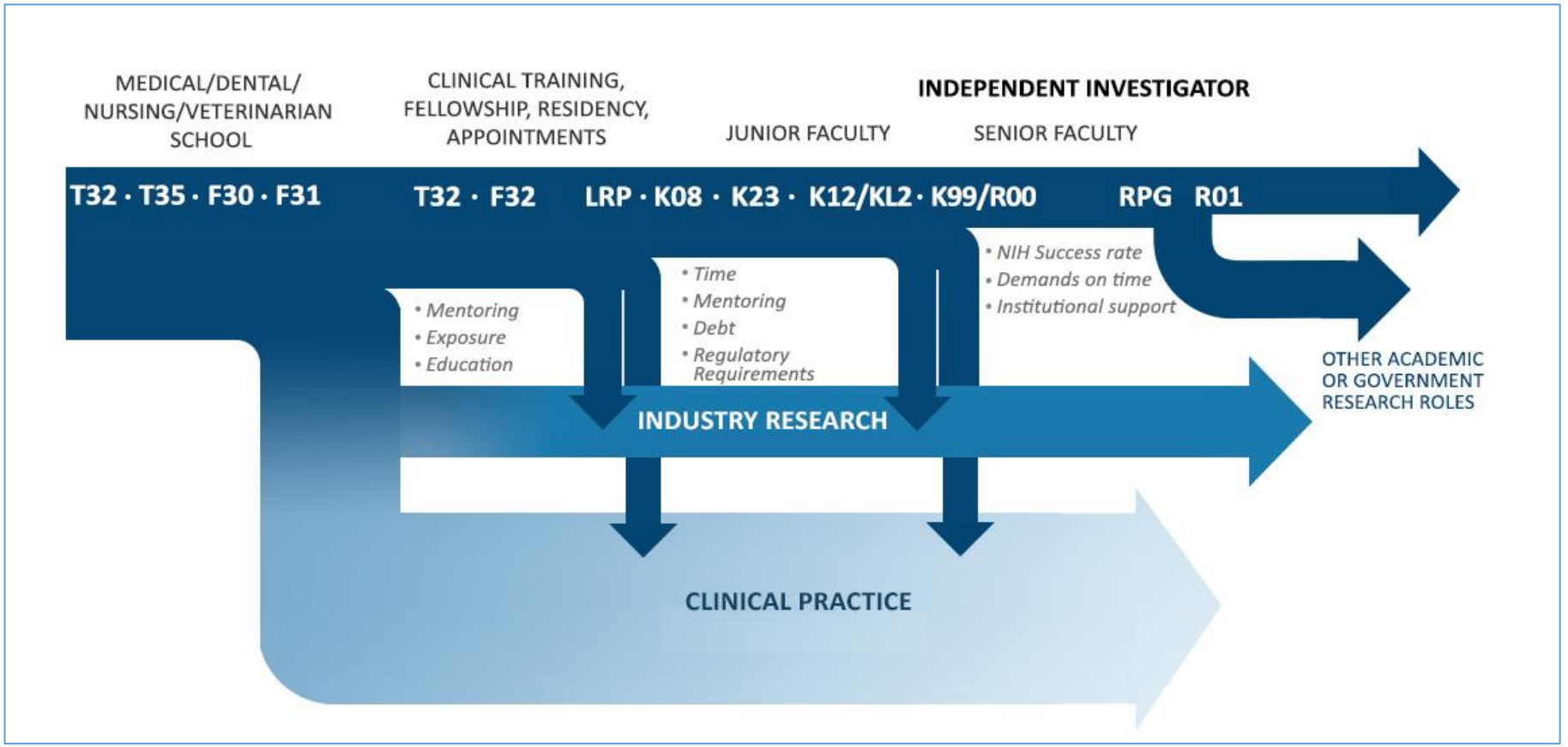
*__MD/PhD includes__: MSTP Programs grads; non MSTP MD/PhD Program grads; PhD and MD in series; PhD and/or MD obtained outside US

Physician-Scientists with MD/PhD Degree

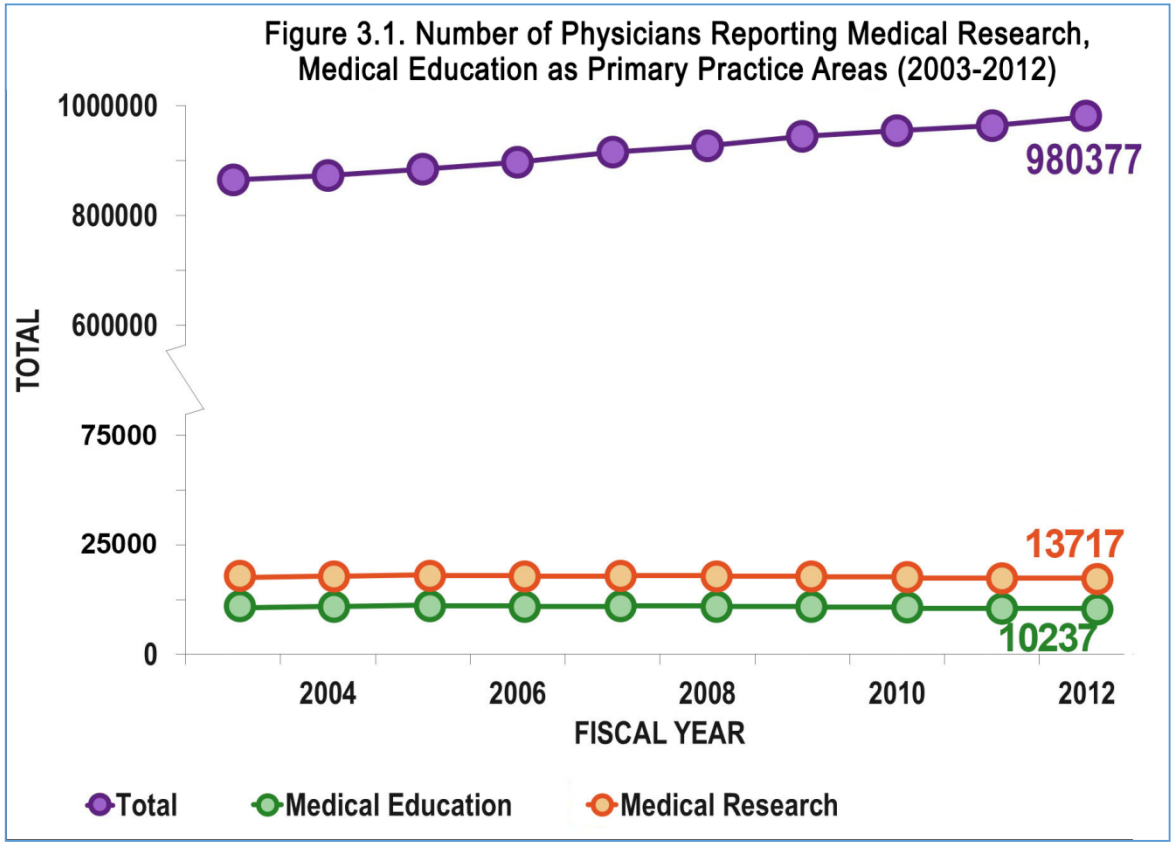


- **In 2012, only 13.4% MD/PhD applicants had prior MSTP support**
- MSTP - higher RPG award rates (35.8% in 2012) than non-MSTP MD/PhDs (22.9%)

Physician-Scientist Pathway



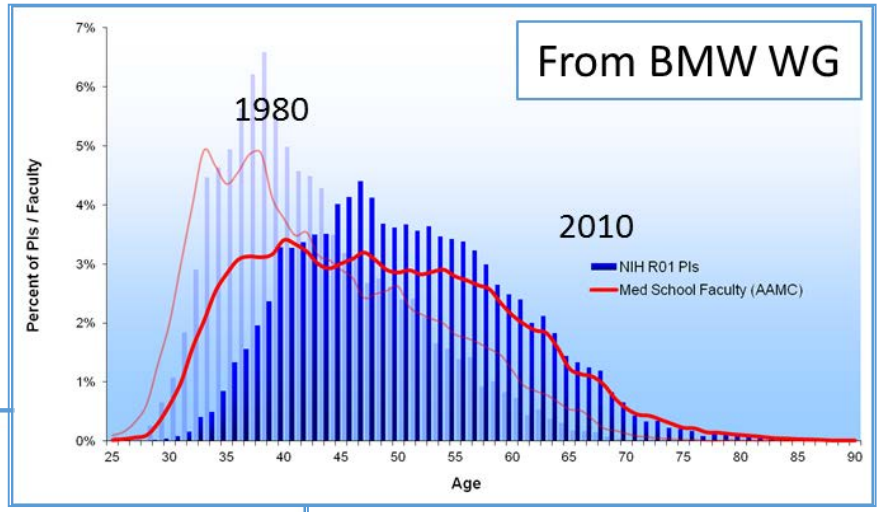
The Physician-Scientist Pool is Stagnating

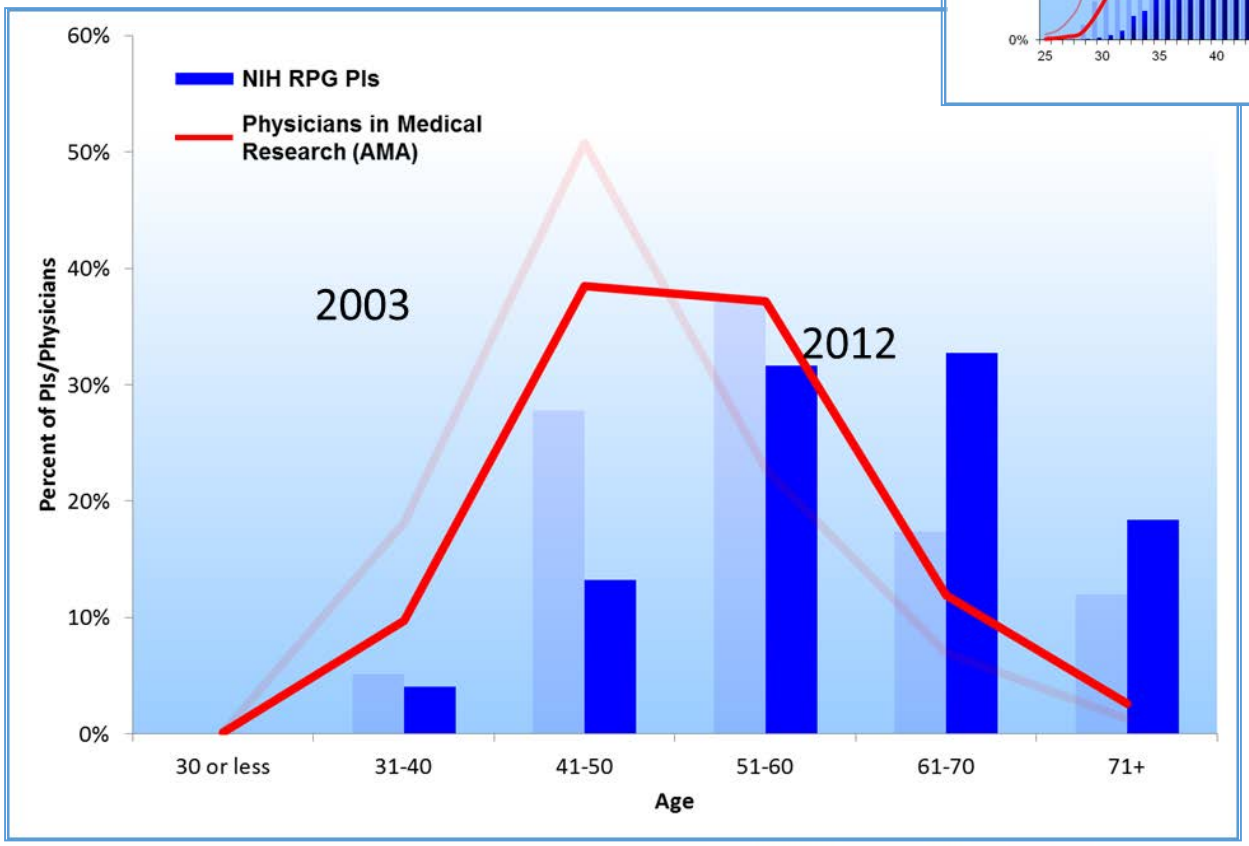


Total number of physician-scientists engaged in research unchanged over past decade

The Physician-Scientist Pool is Aging

Aging in PSW similar to BMW, but more pronounced





Gender Diversity Among Physician-Scientists

MD physician-scientists

- No difference in NIH RPG award rates – (2012): men 22.9%, women 23.8%
- But male applicants outnumbered female applicants ~3:1

Nurse-scientists

- Women RPG applicants outnumbered men ~9:1

Dentist-scientists

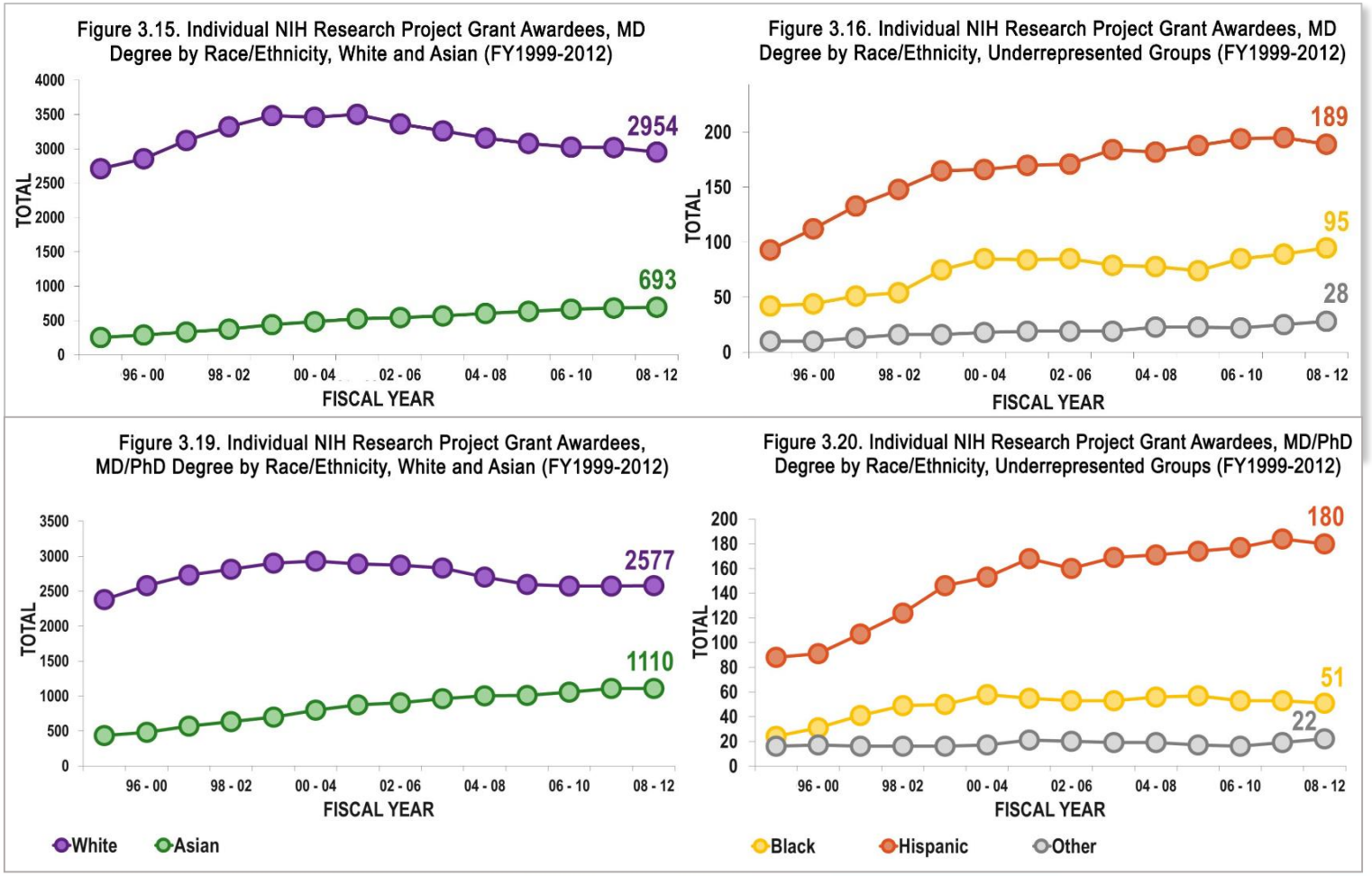
- Men outnumbered women ~3:1 in the workforce
- But women awarded almost one-third of the RPGs

Veterinarian-scientists

- 90% of current graduates are women
- But men outnumbered women ~3:1 among RPG recipients

Race/Ethnicity Differences Among MDs and MD/PhDs

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



Major Challenges for Physician-Scientists (1)

- Availability of research funding
- Average educational debt for 2013
  - For MDs: $175,000
  - For veterinarian-scientists: $162,000
  - For dentist-scientists: $220,000
- Increased length and complexity of training
- Work-life balance
- Clinical vs. research responsibilities

Major Challenges for Physician-Scientists (2)

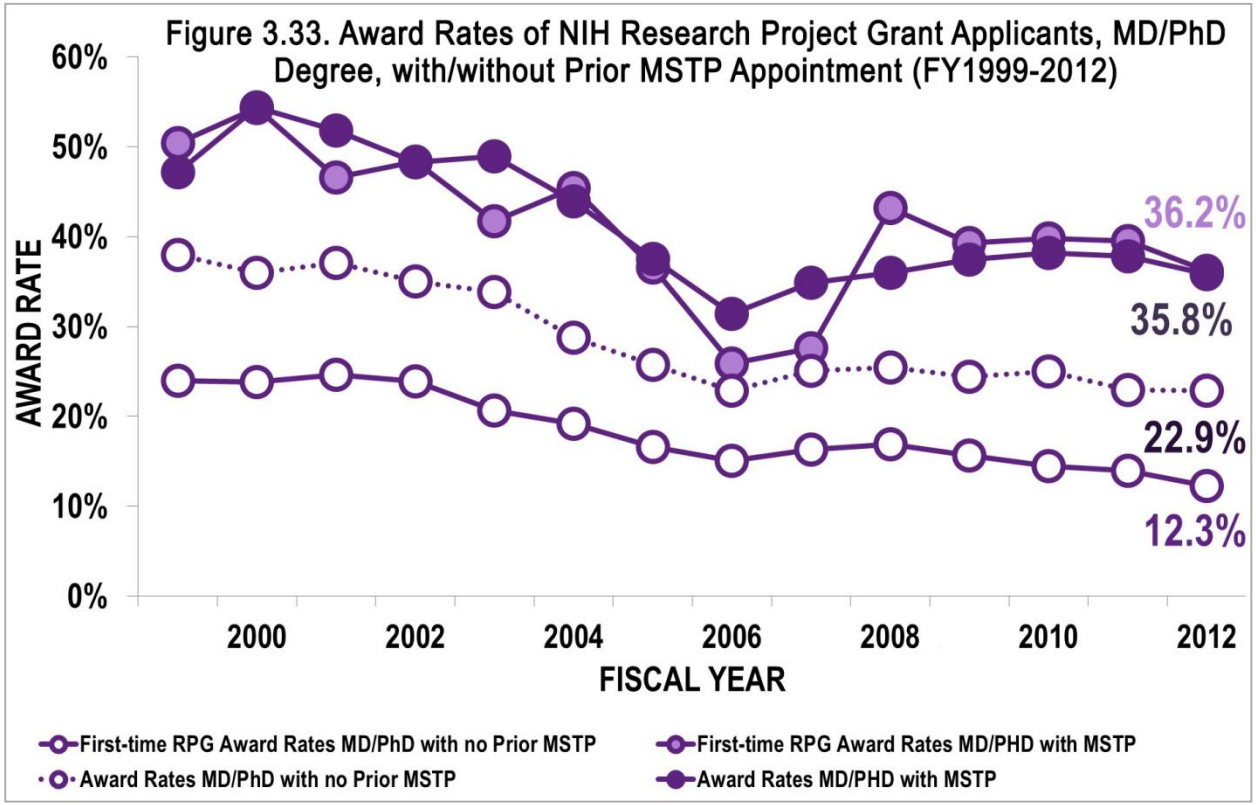
- Particular obstacles for non-MD PS training
  - Primary educational focus is on producing clinical practitioners
  - Shortage of faculty members with scientific research programs as role models/mentors
  - Lack of research training infrastructure

Recommendations

Limitations

- Unresolved question about optimal research training
  - When/where should research training occur?
    - Before/during/after clinical training?
    - Exposure during or before college?
  - What dose of research experience is necessary/sufficient/optimal?
- No high quality data available to address these questions

#1: Sustain Strong Support for MD/PhD Programs



- MSTP - higher RPG award rates (35.8% in 2012) than non-MSTP MD/PhDs (22.9%)
- **However, only ~13% of RPG-funded MD/PhDs were previously supported by MSTP!**

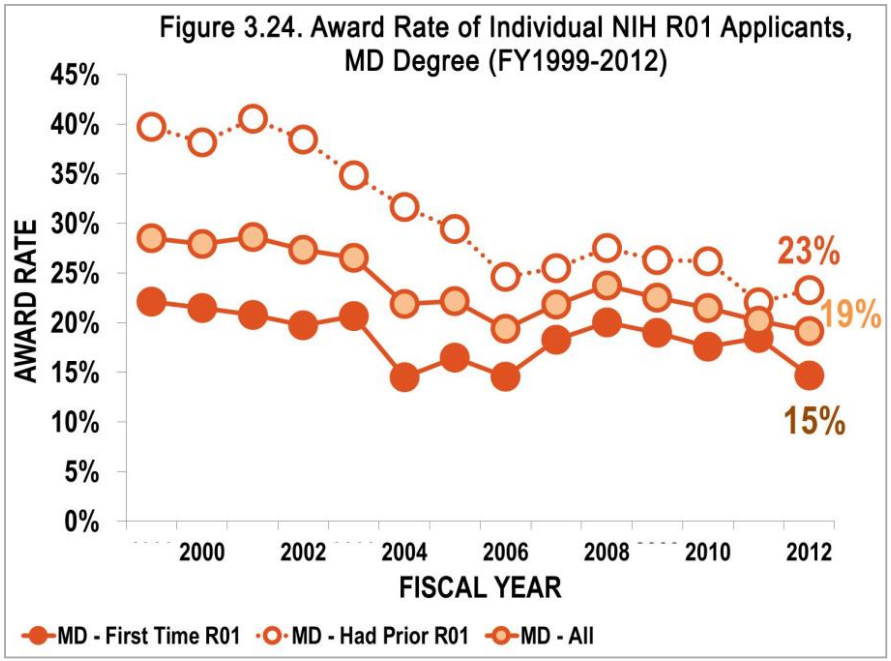
#2: Shift NRSA Postdoc Training Awards to Support Proportionately More Individual Fellowships vs Institutional Grants

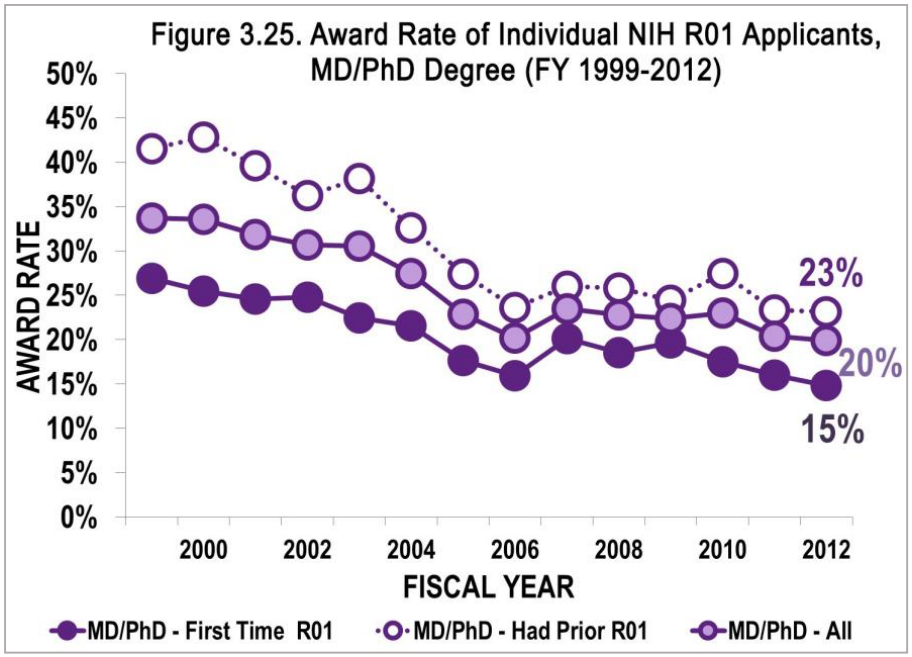
PSW-WG Finding:

Of 27795 T32 appointees (1999 -2008)

- 6500 (23.4%) applied for RPGs
- Award rate was 47.8%

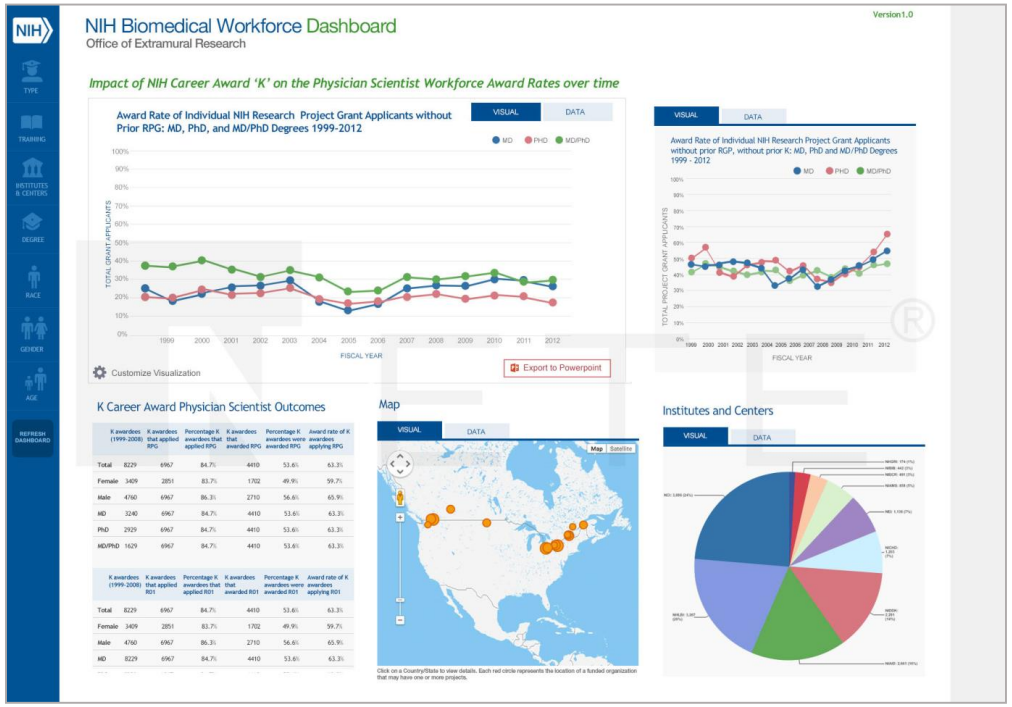
#3: Continue to Address the Gap in R01 Award Rates Between New and Established Investigators





#4: Develop More Effective Tools for Assessing the Strength of the Biomedical Workforce & Tracking Career Progress

- Establish standing committee to support the development and dissemination of biomedical workforce dashboard for real-time tracking
- Require rigorous reporting & tracking of outcomes of NIH awards



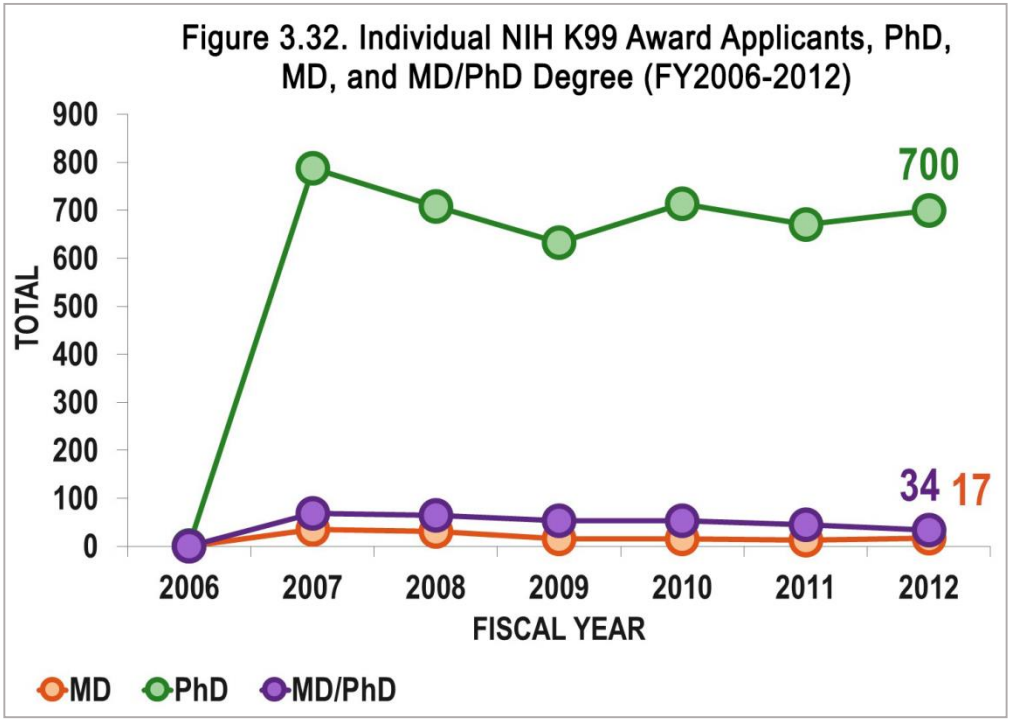
#5: Establish PS-Specific K99/R00-Equivalent Granting Mechanism

K awards

- >80% awardees applied for RPGs
- >60% award rate

PS-Specific Pathway to Independence Award [K99/R00-type]

- Longer period of support - lengthen R00 to 5 years
- Provide sufficient salary support
- Rigorously enforce minimum 75% effort protected time



Current K99/R00 program funds almost exclusively non-MD PhD graduates

#6: Expand Loan Repayment Programs & Increase Dollar Amounts of Loan Forgiven

PSW-WG Finding:

Of 5303 LRP awardees (2003-2008)

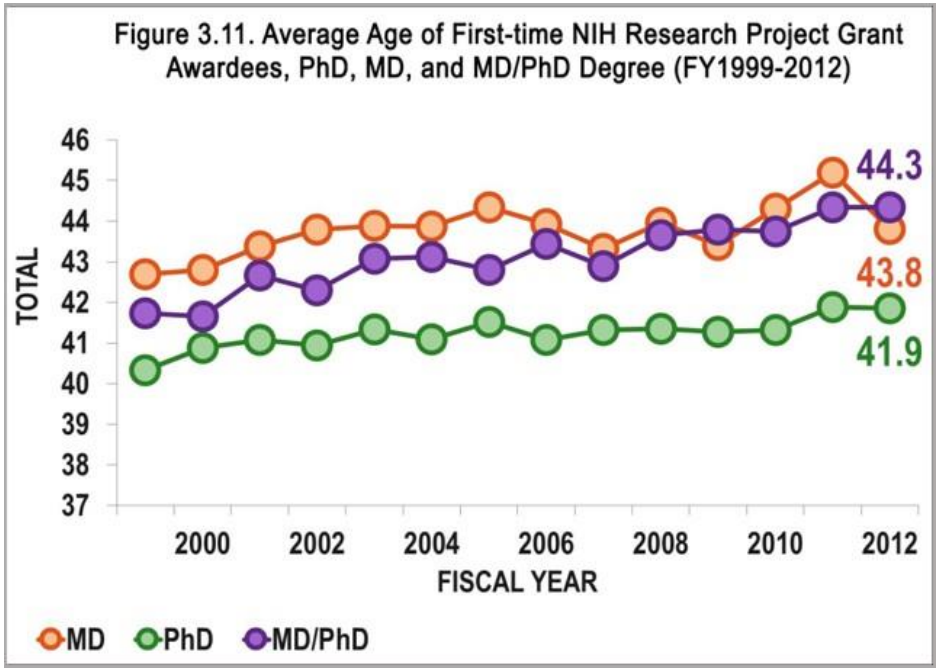
- 2637 (49.7%) applied for RPGs
- Award rate was 47.0%
- Current limit is $35,000 per annum

Expand program to all students pursuing physician-scientist research careers regardless of research area or clinical specialty

#7: Support Pilot Grant Programs to Test Existing & Novel Approaches to Improve and/or Shorten Research Training

Average age of first-time RPG awardees (2012)

- **MDs**: 43.8
- **MD/PhDs**: 44.3
- **PhDs**: 41.9



#8: Intensify Efforts to Increase Diversity in the Physician-Scientist Workforce

- Perpetual deficiencies with regards to diversity
- Focused effort needed to address equity across many domains:
  - Age
  - Gender
  - Race/ethnicity
  - Disability
  - Others

#9: Leverage the Existing Resources of the CTSA Program to Obtain Maximum Benefit for Training and Career Development

- Is this resource being optimally utilized?
- Require rigorous trainee reporting and tracking
- Encourage testing of innovative pilot programs
- Extend to non-MD components of the PSW

Future Considerations (1)

- How to attract optimal candidates to enter the PSW?
- How to incentivize mentorship?
- How will the Affordable Care Act impact the PSW?
- What is the future role for multi-disciplinary teams in clinical research?
  - How to appropriately credit contributions from team members?

Future Considerations (2)

- What is the impact of foreign-trained PS and how is this changing?
- How can the PSW maintain clinical practice in light of:
  - Changing board certification requirements
  - Licensure requirements
  - Malpractice insurance
  - RVU system for clinical faculty
- Can robust data sharing be established among the major organizations collecting PSW data?

Useful Links

- 2014 PSW Working Group Report is accessible electronically at the ACD website at http://acd.od.nih.gov/psw.htm

- Full set of data and graphs of the PSW Report will be accessible from NIH *RePORT* website at http://www.report.nih.gov/workforce.aspx

Thank you!