

The Medical Physics Workforce

SAM Professional Symposium

10:15 – 11:15 AM, Room 209

Session Co-chairs: Wayne Newhauser and Melissa Martin

Speakers: Michael Mills, Dustin Gress, Melissa Martin, Cari Borrás

AAPM Annual Meeting, August 1, 2018, Nashville

Learning Objectives

1. Become familiar with the **General Characteristics** of the Workforce, including therapy, diagnostic, nuclear medicine, and medical health physics.
2. Discuss Projections of the Medical Workforce and Future Outlook
3. Explore Strategies and Tactics to Maintain an Adequate Workforce

Introduction

- The US developed a community of professionals for the **safe and beneficial use of radiation**.
- The number of these professionals has **shrunk alarmingly**, as documented by AAAS (2014), GAO (2014), HPS (2013), NA/NRC (2012), and NCRP (2015).

NCRP on Workforce Crisis

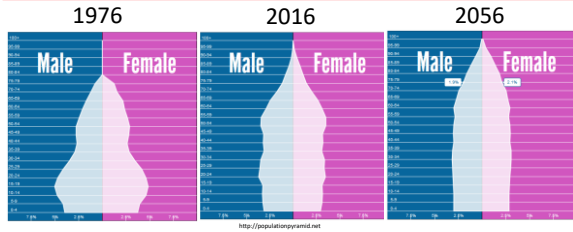
- US is on the “verge of a severe shortfall of radiation professionals such that **urgent national needs will not be met.**”
- Projected shortfalls will adversely affect the **public health**, radiation occupations, emergency preparedness, and the environment.

NCRP Statement 12, 2015

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Retirements & Changing Demographics

US GAO estimated that **31%** of the federal work was eligible to retire in 2017!



<http://populationpyramid.net>

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Why Should AAPM Members Worry?

- National Interest: adequacy of workforce to meet needs
- Professional interest and self interest
- Projections of workforce are uncertainty
 - Timing of wave of **retirements**
 - Healthcare economics
 - Changes in science, technology, and medicine

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End

Supply of **New** Doctorates (USA 2013)

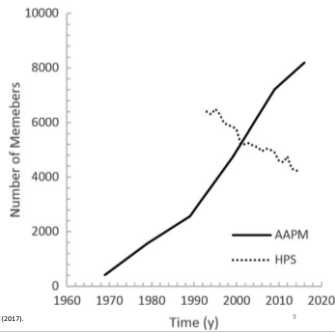
- 52,760 in all fields
- 9,290 in physical science
- 8,963 in engineering
- In engineering & physical sciences
 - Median age at award: 30 y
 - Time to doctorate: **6.5 y**
 - ¼ male, ¼ female
 - About half domestic
 - >70% white
- 169 in nuclear engineering (<2% of engineering PhDs)
- 113 in **medical physics** (~1% of all physical science PhDs)
- **10 in health physics** (<0.2% of all physical science PhDs)



Sources: Chronicle of Higher Education, Aug 21, 2013; ORES Reports 74 and 75, 2013; Clark, CAMPED GEPIC Report, 2013.

Trends in Domestic Workforce Size:

Memberships of AAPM and HPS



Newhauser WG. The Medical Physics Workforce. HPS, 112:2 139-148 (2017).

Why Should We Worry? Self Regulation

- Self-regulation is a central tenet of professions
- Three elements of self-regulation
 - Agreed upon standards by which individuals may enter the profession and by which they must then practice.
 - **Responsibility for teaching** these professionals how to exercise those standards on a day-to-day basis.
 - Enforcing those standards and deciding when and how those violating them will be disciplined.

Madra and Burkhardt, JAMA, 313:18-1793 (2015)

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R&D Funding in USA, 1972 - 2014

