Department of Defense:
Research & Engineering Leadership

Women in Defense National Conference
(WID 2018)

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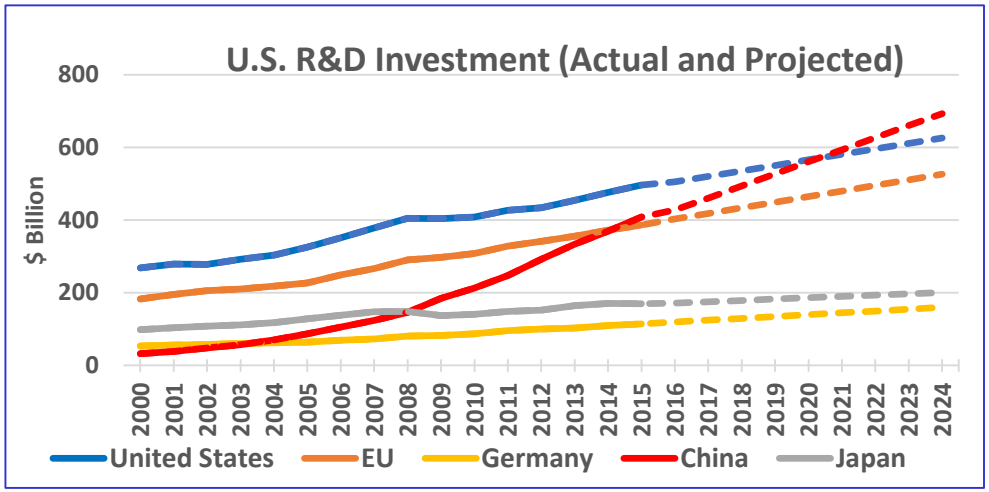
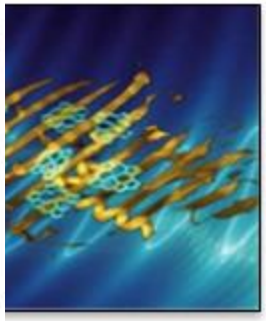
The World Today
Technology is Transforming the Battlespace

- **Easy proliferation of knowledge and technology has eroded U.S. historic advantages**
  - Increasing systems capabilities
  - Advanced production capabilities
    - Driving lower costs
    - Decreasing the "time to market"
- **Increased rate of investment in military Research & Development (R&D) from near-peers**
- **Increasingly Competitive National Security Technical Environment**
- **Speed and cycle time become the discriminator**

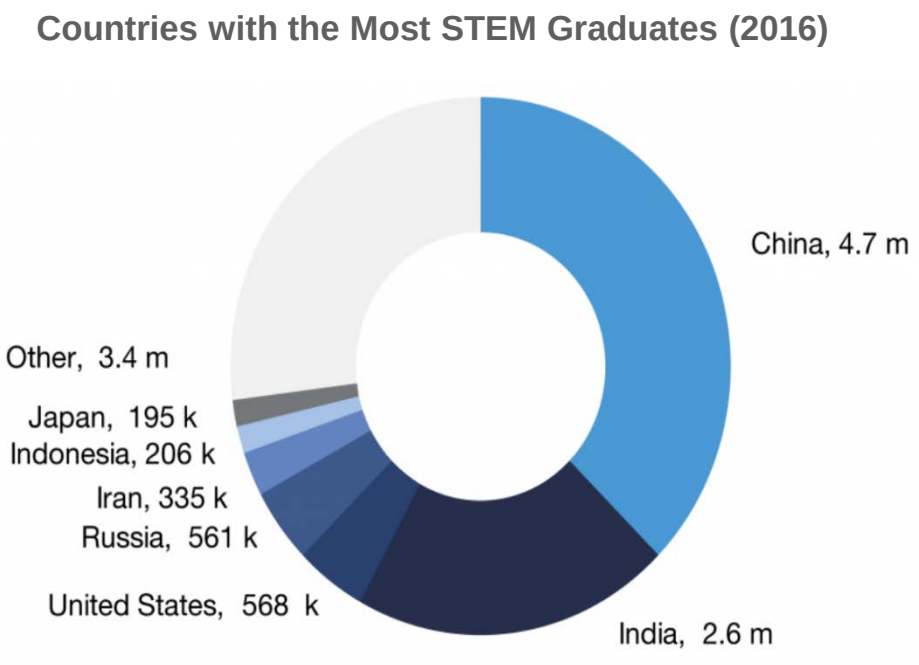
- 2017 GLOBAL R&D FUNDING FORECAST WINTER 2017
Industrial Research Institute, R&D Magazine

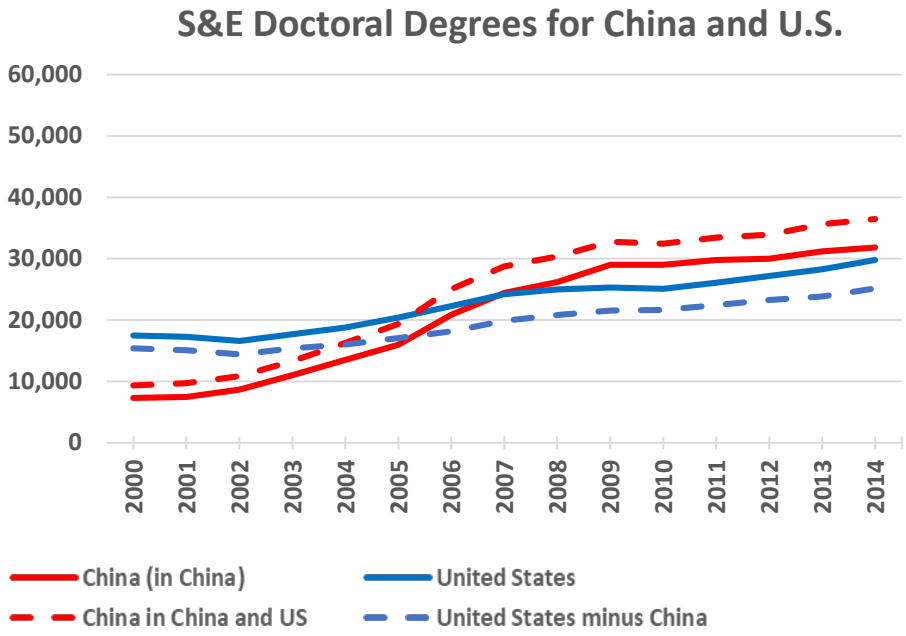


- NSF 2015 data predicted R&D investment parity with China in 2020
  - Feb 2018 National Science Board (NSB) estimates China R&D investment parity with U.S. by end of 2018



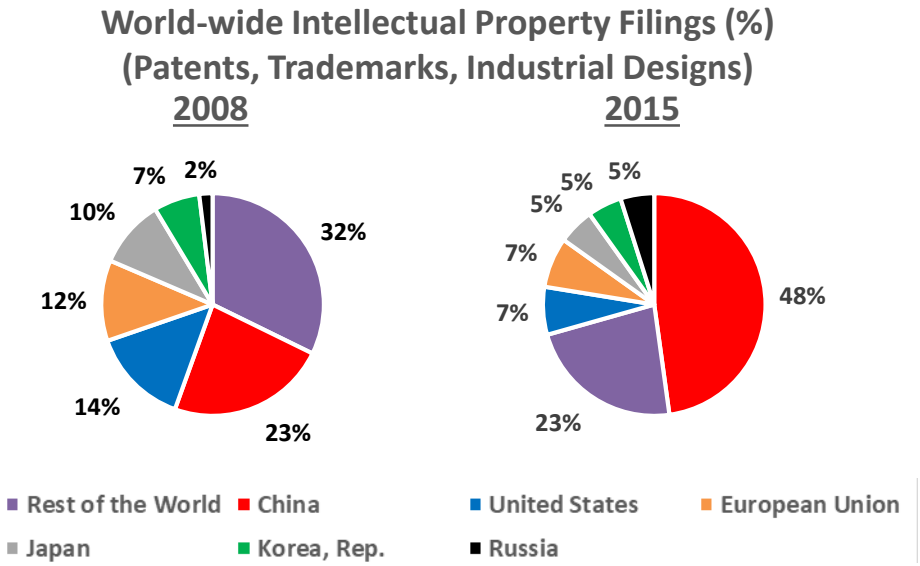
Science & Technology Is Crucial To Maintaining Technical Advantage

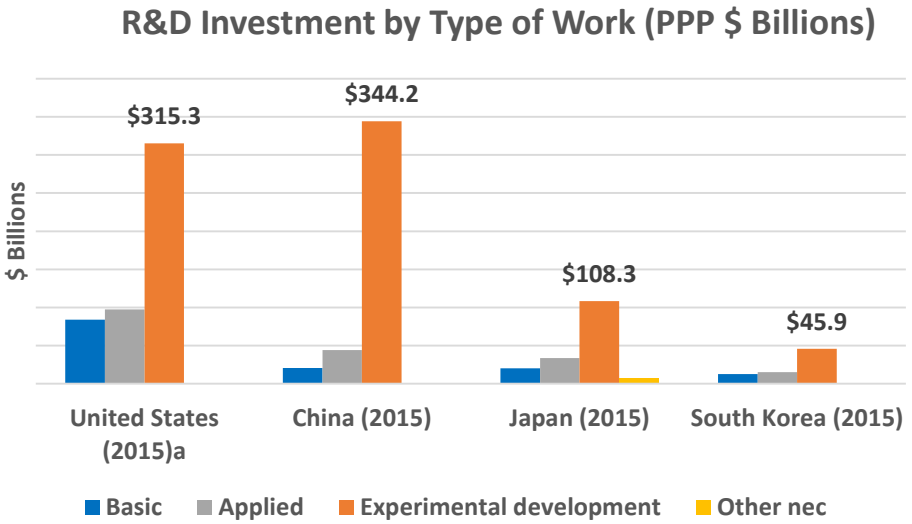




U.S. Education Institutions Boost Number of China's S&E Ph.D. Graduates by Almost 15% When China Is Already Producing the Most STEM Graduates in the World.

Intellectual Property & Research and Development





- U.S.'s share decreased by half from 14% to 7% in the same time frame
- China's share more than doubled in seven years from 23% in 2008 to 48% in 2015

Source: World Intellectual Property Organization (WIPO), Statistics Database at www.wipo.int/ipstats/. The International Bureau of WIPO assumes no responsibility with respect to the transformation of these data.

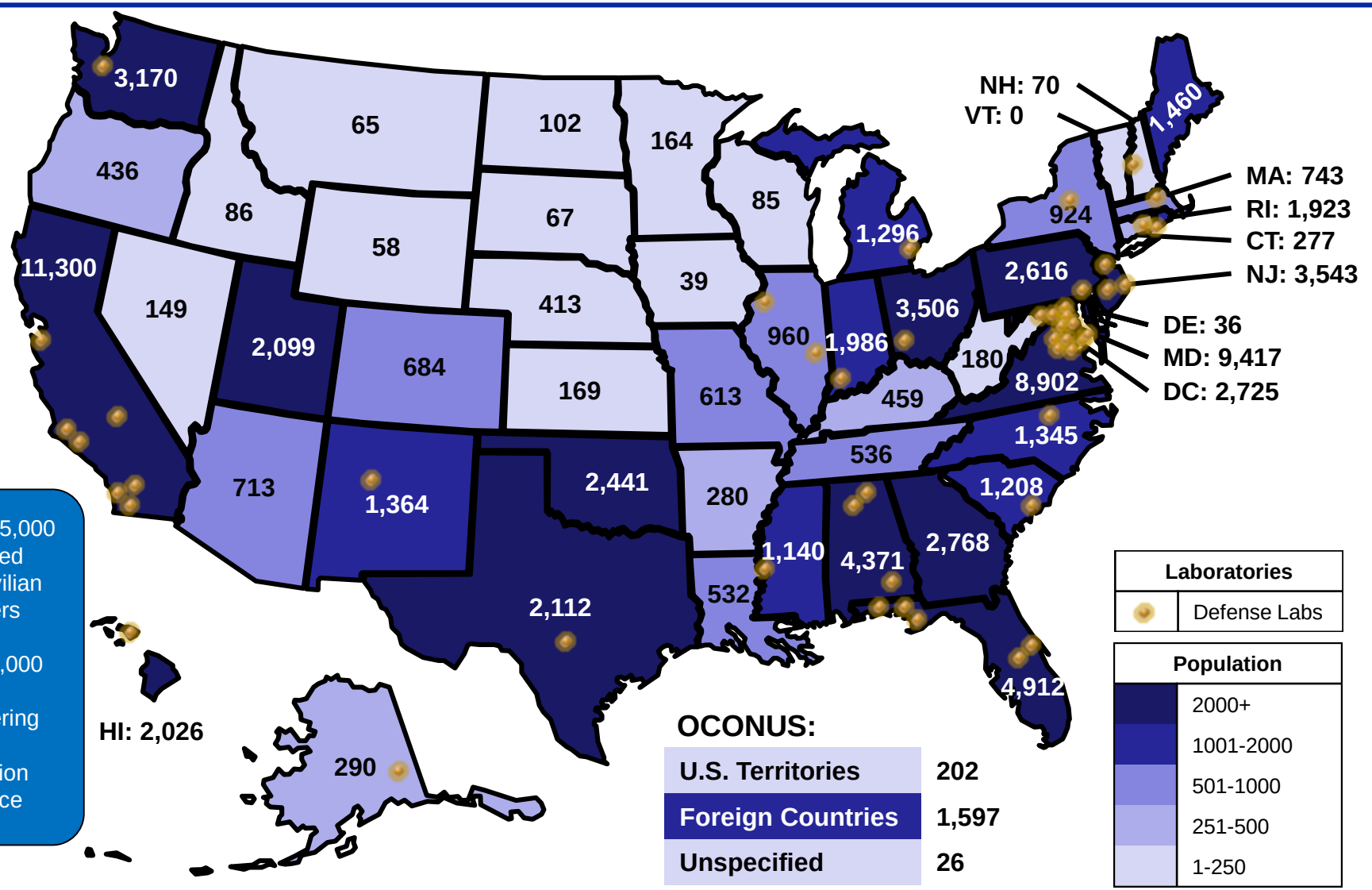
- U.S. leads in basic and applied research investments
- China leads in experimental development investments

Source: National Science Foundation, National Center for Science and Engineering Statistics; SRI International; Science-Metrix; Elsevier, Scopus abstract and citation database, accessed July 2017, *Science and Engineering Indicators 2018*

Maintaining Technology Superiority

- **We will address challenges to technological superiority by identifying and investing in *innovative technologies and processes***
- **We are pushing the envelope with *innovative* and *cutting edge research***
- **Beyond technical innovation, we are pursuing *new practices* and *organizational structures* to ensure future U.S. technical dominance**
- **From *basic research* to *advanced capabilities*, the DoD Research & Engineering (R&E) enterprise provides the *technological foundations* that ensures our military of the future remains the *most capable in the world***
- **The U.S. military has long relied on *high quality people*, *technological superiority*, *innovative operational* and *organizational constructs*, and our *unmatched ability to fight* as a *Joint Force***

The U.S. DoD is the World's Largest Engineering Organization



Over 125,000 Uniformed and Civilian Engineers

Over 42,000 in the Engineering (ENG) Acquisition Workforce

OCONUS:

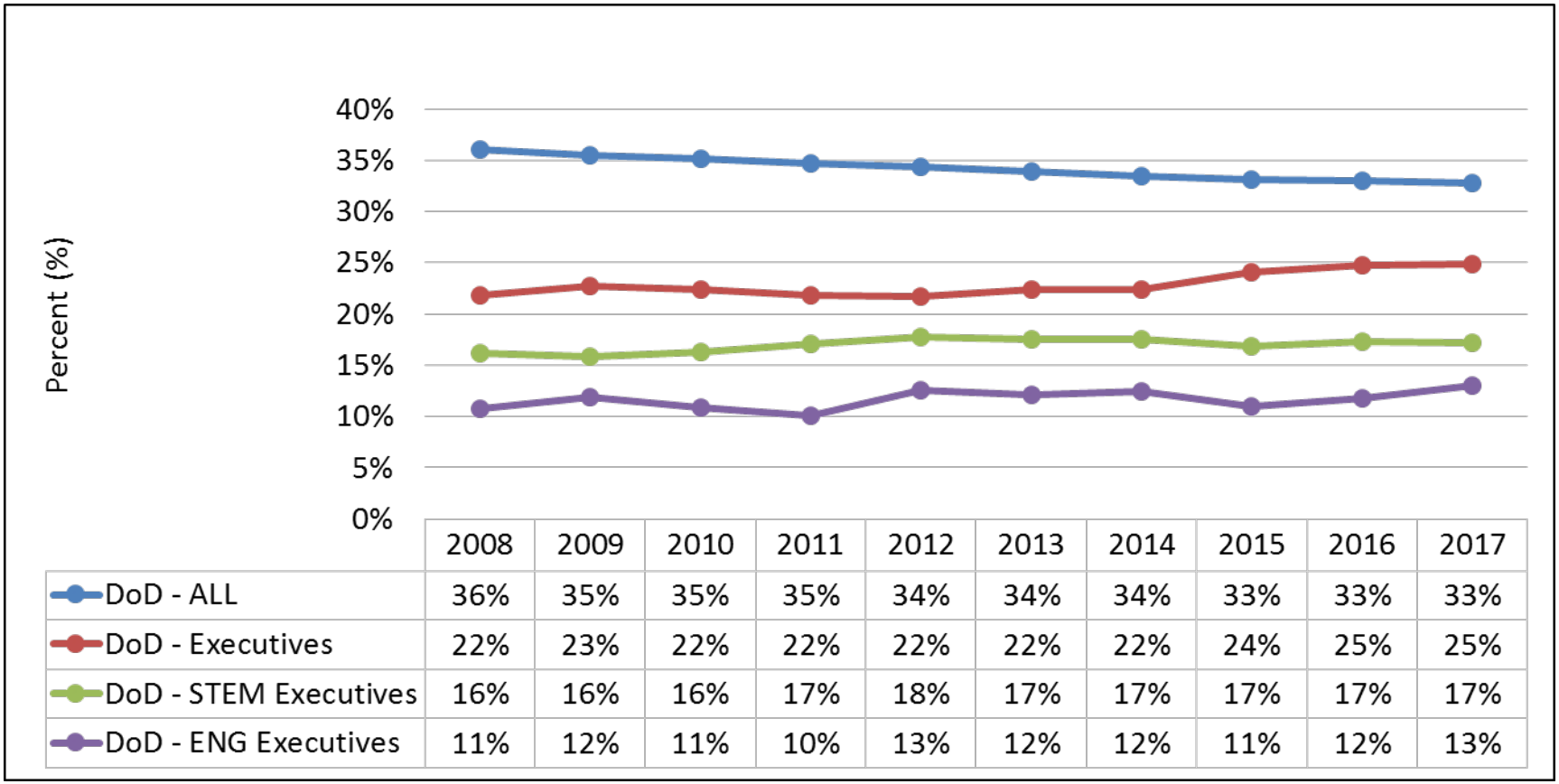
U.S. Territories	202
Foreign Countries	1,597
Unspecified	26

Laboratories
Defense Labs

Population
2000+
1001-2000
501-1000
251-500
1-250

Source: FedScope.gov

Women in Defense

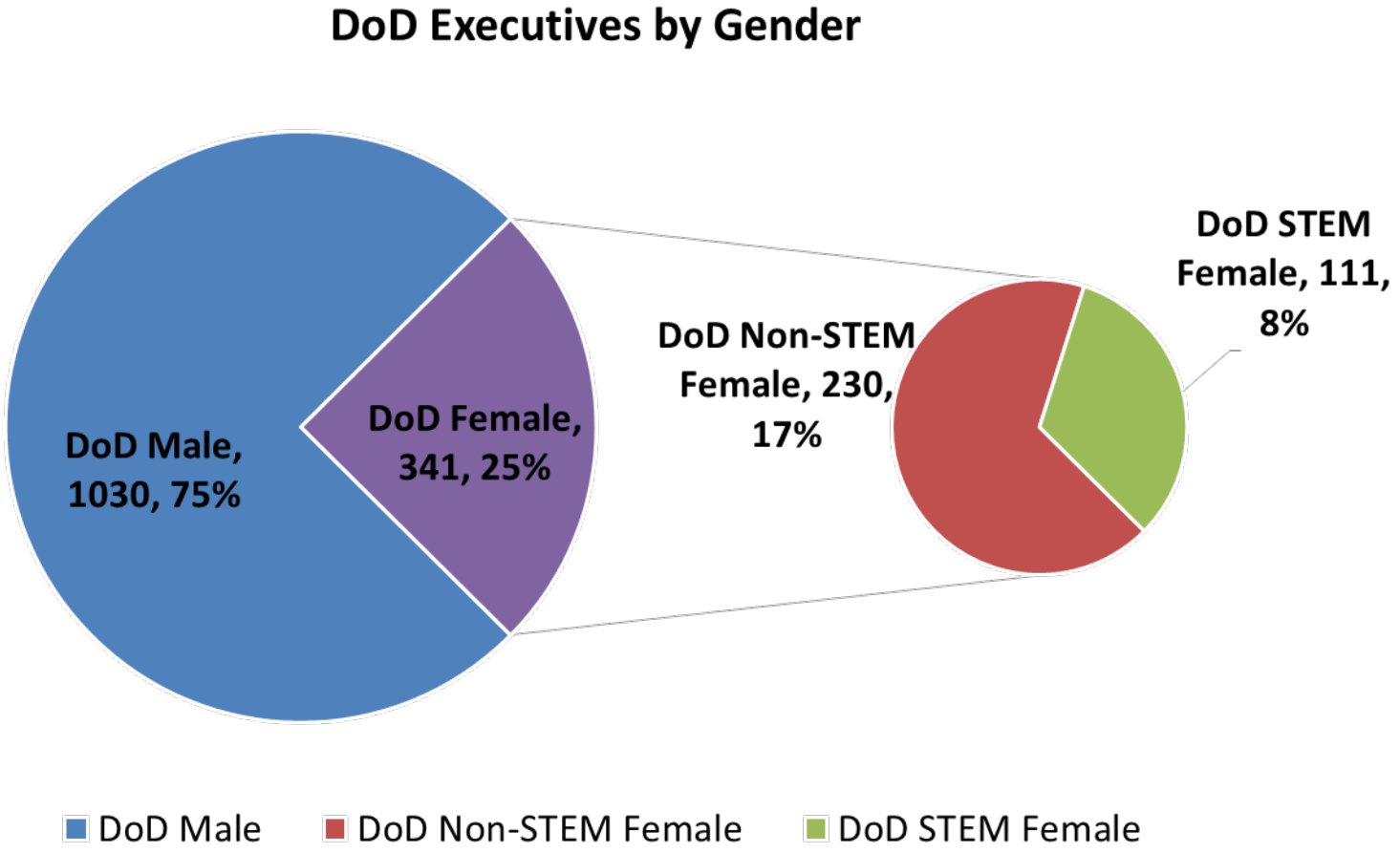


	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
DoD - ALL	36%	35%	35%	35%	34%	34%	34%	33%	33%	33%
DoD - Executives	22%	23%	22%	22%	22%	22%	22%	24%	25%	25%
DoD - STEM Executives	16%	16%	16%	17%	18%	17%	17%	17%	17%	17%
DoD - ENG Executives	11%	12%	11%	10%	13%	12%	12%	11%	12%	13%

Over the last decade, the DoD has seen a decrease of 3% in the ratio of Women employees; the ratio of DoD Women executives has increased.

Source: Defense Civilian Personnel Data System, May 2018

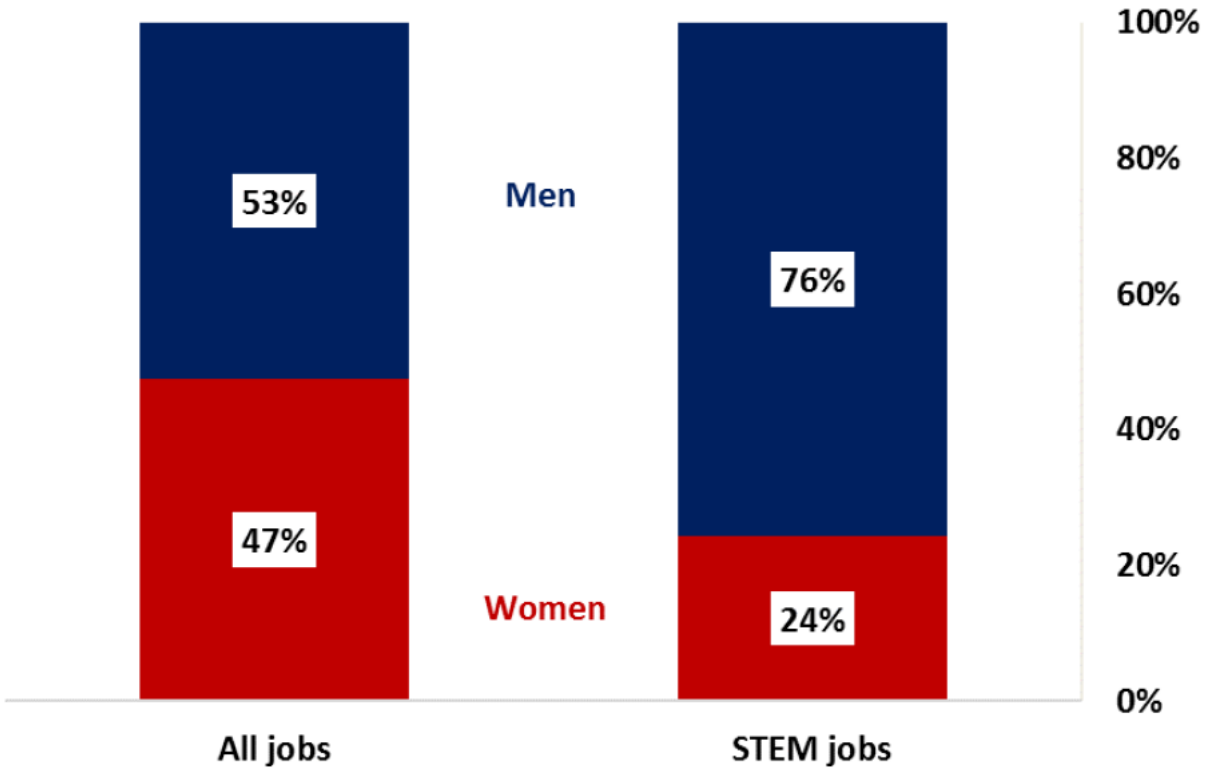
FY2017 DoD Executives Gender Distribution With STEM Breakout



Source: Defense Civilian Personnel Data System, May 2018

2015 US Gender Shares of Total and STEM Jobs

Figure 1. Gender Shares of Total and STEM Jobs, 2015



Source: OCE calculations using American Community Survey public-use microdata.
Note: Estimates are for employed persons age 16 and over.

Source: U.S. Department of Commerce, Economics and Statistics Administration. "Women in STEM: 2017 Update." ESA Issue Brief #06-17. November 13, 2017. Available at http://www.esa.doc.gov/sites/default/files/women-in-stem-2017-update.pdf

The percentage of women in STEM fields has remained constant at 24% since at least 2009.

Make a Difference as a DoD Engineer

- Help bring Soldiers, Sailors, Airmen, and Marines home to their families
- Work on ground-breaking innovations
- Inspire and mentor the next generation