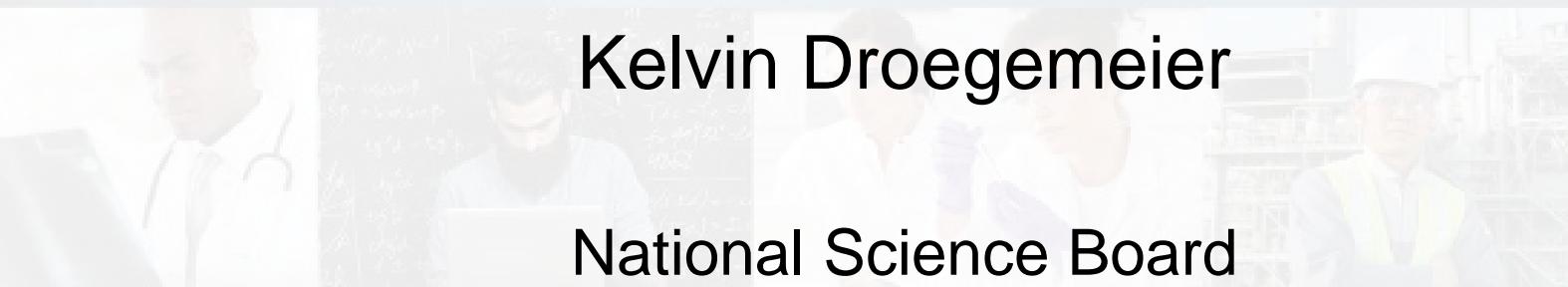


Revisiting the STEM Workforce

*An Overview of the new report of the
National Science Board*



Kelvin Droegemeier

National Science Board

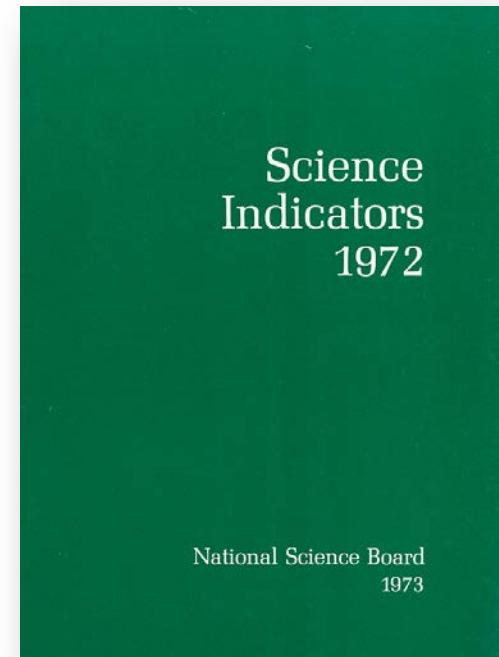
REVISING THE
STEM WORKFORCE

September 21, 2015

Why Revisit the STEM Workforce?



- ❖ Human capital is of critical importance to the long-term health of U.S. science and engineering
- ❖ As the workplace changes, our concept of who is a “STEM worker” is changing
- ❖ NSB can bring data to bear on a variety of policy debates involving the STEM workforce



Goals for the Report

- ❖ Provide nuance and context, not solve or take sides in debates
- ❖ Identify insights that could help move the discussion forward
- ❖ Identify data/research gaps



REVISING THE STEM WORKFORCE

A Companion to Science and Engineering Indicators 2014

NATIONAL SCIENCE BOARD

Three Major Insights

I: The “STEM workforce” is extensive. It is also defined in various ways and is made up of a heterogeneous mix of many “sub-workforces.”

- The “STEM workforce” lacks a consensus definition

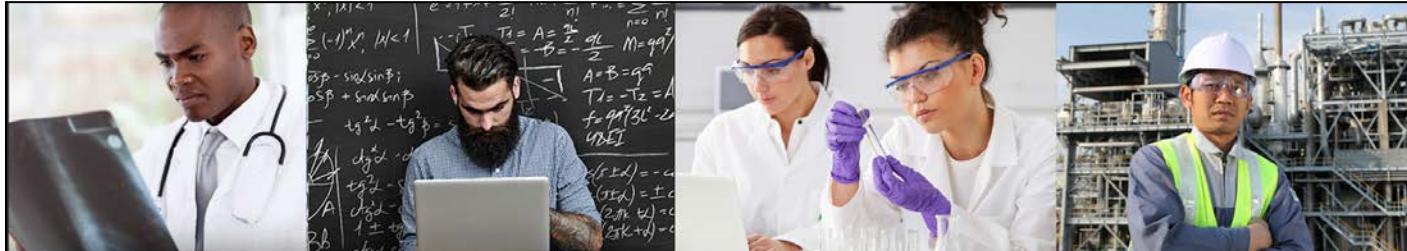
- *Indicators* describes the “S&E workforce”
 - Work in an **S&E job**: 5.4 million
 - Have an **S&E degree**: 19.5 million
 - Job requires **S&E expertise**: 16.5 million



Insight I (*continued*)

The “STEM workforce” is extensive. It is also defined in various ways and is made up of a heterogeneous mix of many “sub-workforces.”

- There is no single, monolithic “STEM workforce.”
- There are differences based on degree, occupation, geography, etc.
- Is there a glut or shortage? *It depends...*



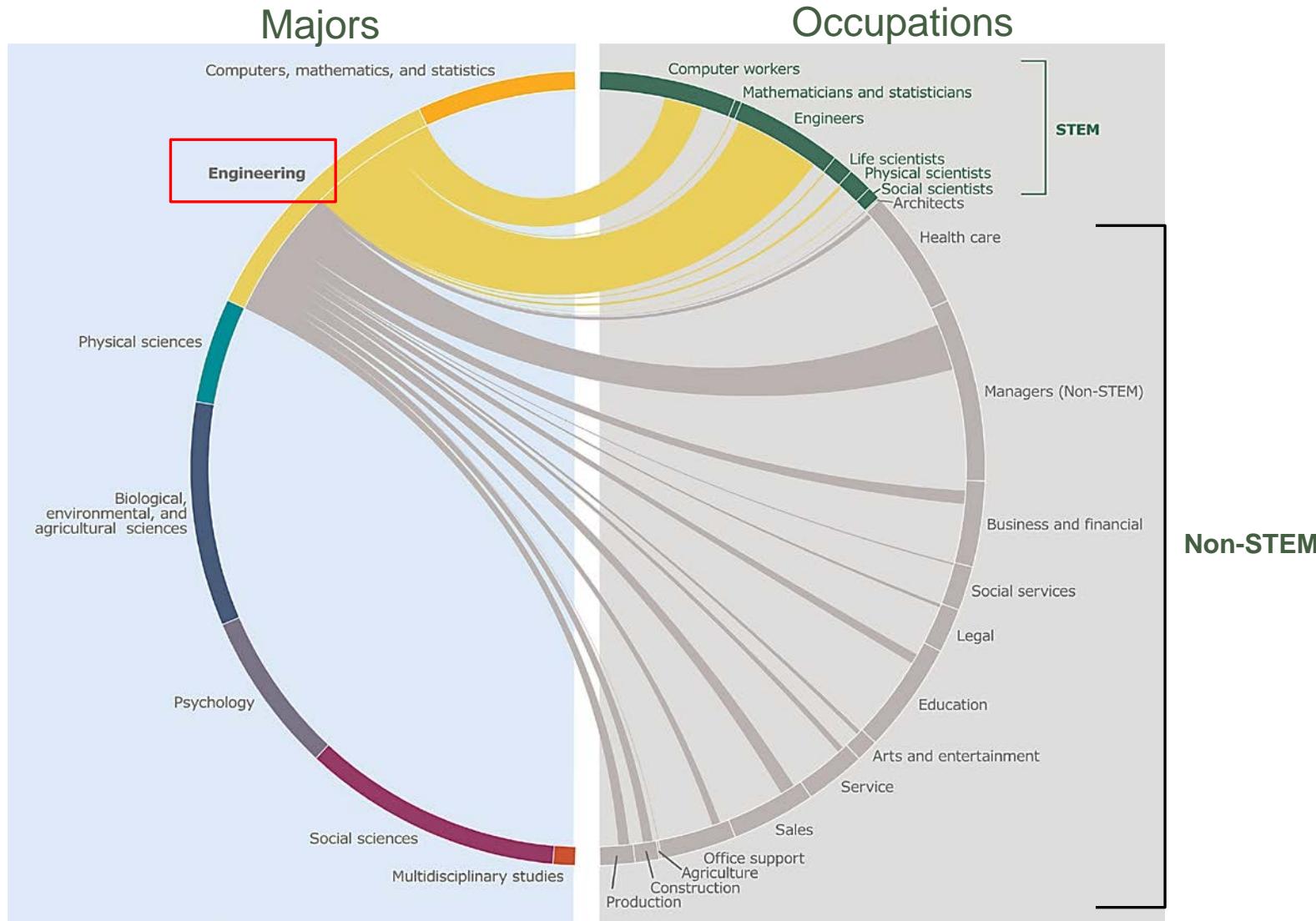
Insight II

STEM knowledge and skills enable multiple, dynamic pathways to STEM and non-STEM occupations alike.

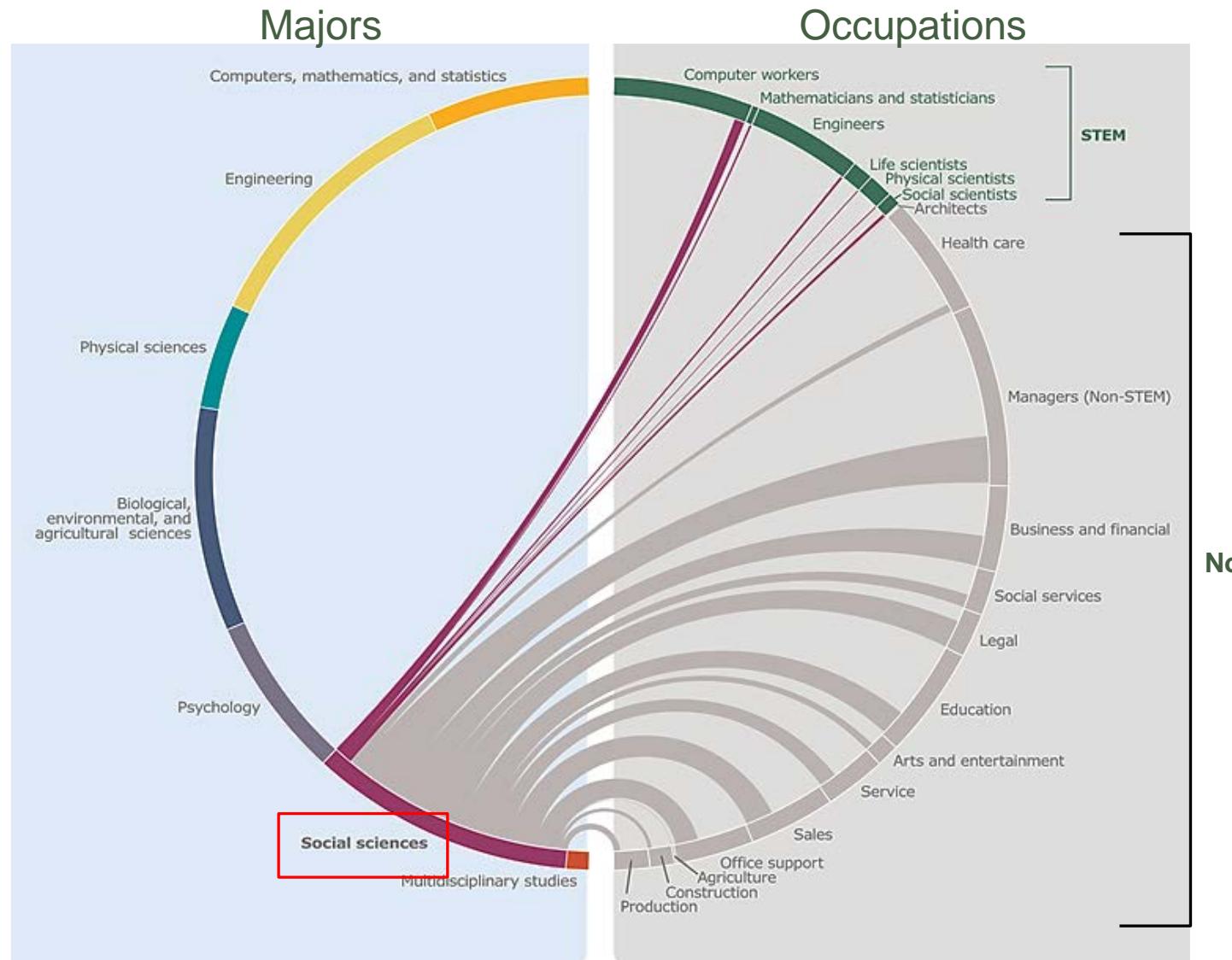
- Not a linear pipeline from STEM degree to STEM career
- Individuals with an S&E degree embark on many pathways, in and out of their field of degree and even in and out of “S&E” or “STEM”
 - Only about 1/3 of individuals with an S&E degree are employed in a job classified as S&E
 - Over half are employed in non-STEM occupations



Pathways – Engineering



Pathways – Social Sciences



Insight II (*continued*)

STEM knowledge and skills enable multiple, dynamic pathways to STEM and non-STEM occupations alike.



- Pathways are dynamic and change over time
- Better questions: e.g., what knowledge and skills do students and incumbent workers need to thrive?

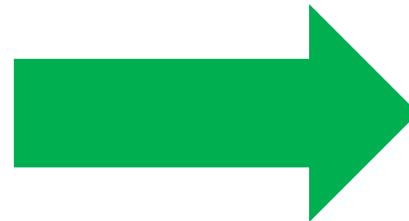
Insight III

Assessing, enabling, and strengthening workforce pathways is essential to the mutually reinforcing goals of individual and national prosperity and competitiveness.

- What influences career pathways? How do they change over time?
- Are careers in STEM attractive?
- Roadblocks?



**STEM
Workforce**



**STEM-Capable
U.S. Workforce**

NSF Role

- ❖ **NCSES:** Better longitudinal data on careers; data on factors that influence career pathways; covering certifications and non-degree credentials
- ❖ **EHR:** Identifying core STEM competencies; learning in informal settings; broadening participation
- ❖ **NSB:** Short, timely follow-up pieces that unpack some workforce complexities (e.g., career destinations for STEM PhDs)

