

Is the U.S. running out of
STEM workers?
How would we know?
What would we do about it?

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What would a “shortage” of STEM workers look like?

1. Production is lower than in the past (transistors)
2. Competitors share is growing (fruits)
3. Production is lower than producers would like (cars)
4. Less is produced than the nation needs (well-trained k-12 science teachers)
5. Production is not meeting market demand, with rising prices (nurses)

Are we running out of STEM workers?

- *Unemployment rates of some STEM workers rose during the 1990s while general unemployment rates fell
- *Earnings of STEM workers do not seem to be rising faster than the average
- *New PhDs in some fields have trouble finding jobs
- *So...**NO**, as nearly as we can tell. **BUT...**

Much of our information about STEM workers is 2-3 years old

*1805: Jefferson knew in less than 2 years that L&C had not found the Mississippi-Pacific link

*1781: King George knew in less than 2 years that his troops lost at Yorktown

*325 BCE: Alexander knew in less than 2 years that Punjab was falling away

Is it possible to get improved data on the STEM workforce?

*Faster?

*With more characteristics detail?

*With more geographic detail?

The answer is YES

What are the limits on data timeliness?

* The **slowest** federal data:

- Decennial census
- Natality statistics from NCHS
- Much STEM statistics from SRS/NSF

* The **fastest** federal data:

- Unemployment data from BLS/Census Bureau
- Foreign trade data from Census Bureau

* **Even faster!**

- Gallup Poll
- RAND web surveys

Who would use the improved data if available?

- *High school students and guidance counselors
- *College juniors and seniors
- *Business firms hiring STEM workers
- *The federal government (caution!)

What can the federal government do to improve STEM data for decisionmaking?

- *Decide what data characteristics are desired. C.f. OSTP/SLOAN/RAND workshop report
- *Give the job and the resources to OIRA/OMB, SRS/NSF, BLS/DOL, and NCES/DOEd. They'll get it done.
- *Get the information out. Sloan Foundation project at PRB

How can the federal government increase the STEM workforce...if:

- * Production is lower than in the past
- * Competitors share is growing
- * Production is lower than producers would like
- * Less is produced than the nation needs
- * Or...Production is not meeting market demand, with rising prices

How can the federal government increase the STEM workforce?

- * More graduate and postdoc training support—**”pushing on a string”**
- * Create more STEM jobs and facilities—**pulling on the string**
- * Lower the length, variance and uncertainty of PhD programs—**tightening the string**
- * Admit more foreign students and STEM – workers—**tying on another ball of string**
- * **With 10-year+ lag, beware destabilizing**

To conclude:

- *Is there a shortage? **No, as of several years ago**
- *Is it possible to know faster and in more detail? **Definitely**
- *Who could use this information? **Students, employers, government**
- *What can the government do to improve the data? **Priority and resources**
- *What can the government do to increase the STEM workforce? **First, do no harm**